BARCO

Serial Communication
LCD-DLP Projector

USERS MANUAL

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2. Communication basics

Communication protocol summary

Start byte	\xfe
Projector address	
Command byte(s)	
Data bytes(OPTIONAL)	
Checksum byte	
Stop byte	\xff

- Start byte

  The "start byte" informs the projector (in case of transmission) or the computer (in case of reception) that a new data transfer will take place.

- Projector address :

  The "projector address" defines the address of the projector the computer wants to talk to (in case of transmission) or the address of the projector that answers (in case of reception).
  The maximum number of projectors that can be addressed by one computer is 256.

- Command byte(s) :

  There is at least one command byte to define the action to be performed. Commands that are not often used or complex commands can take more than one byte.
  All command bytes that are sent by the computer to get information out of the projector are repeated in the answer-data-transfer of the projector.

- Data bytes(OPTIONAL) :

  Wheather the command bytes are followed by one or more data bytes depends on the contents of the command bytes. (Some commands are not followed by data bytes at all !)

- Checksum byte :

  The "checksum byte" is used to detect errors during transmission or reception.
  Formula :
  Checksum byte
  = (Projector address + Command bytes + Data bytes) modulo 256

- Stop byte :

  The "stop byte" informs the projector (in case of transmission) or the computer (in case of reception) that the data transfer is complete and that the interpretation of the command and data bytes can start.

Any command byte, data byte or checksum byte that equals \x80, \xfe or \xff has to be converted !
Transmission :
- Instead of \x80, send \x80 followed by \x00.
- Instead of \xfe, send \x80 followed by \x7e.
- Instead of \xff, send \x80 followed by \x7f.

Reception :
- Replace \x80 followed by \x00 with \x80.
- Replace \x80 followed by \x7e with \xfe.
- Replace \x80 followed by \x7f with \xff..

Communication settings summary

Baud rate	see Owner's Manual
Data bits	8
Parity	no
Stop bits	1

- Baud Rate :

  Defines the speed of the data transfer.
  The baud rate can be set, depending on the type of projector, using the dip switches on the processor board of the projector or using the menu structure.
  Consult the Owner's Manual of the projector on how to change the baud rate setting !

- Data Bits :

  Eight data bits are used for each character of the data transfer.

- Parity :

  There is NO parity bit used to perform error checking.

- Stop Bits :

  One stop bit is used to define the end of a character.

- Connector labelled "RS232 IN" :

  This female D9-pin connector is used to connect the projector with the computer.

- Connector labelled "RS232 OUT" :

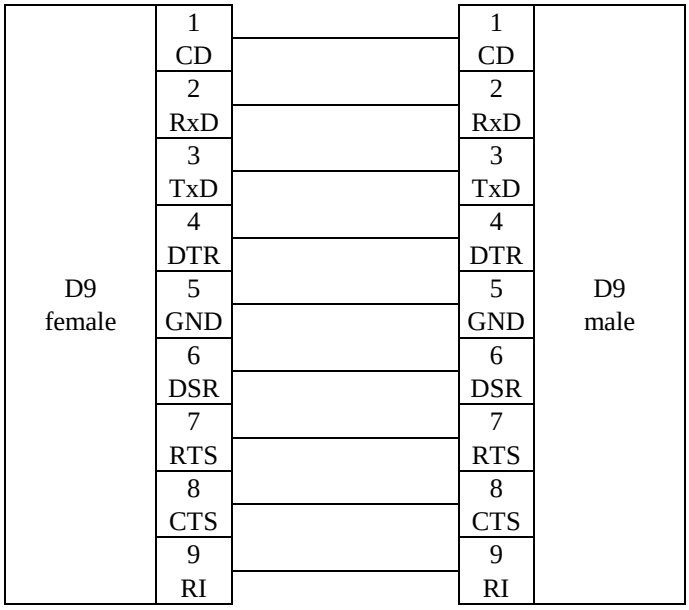
  This male D9-pin connector is used to drive the next projector in a chain.

- Pin-out :

  The pin-out is the 'standard' PC-AT convention, which is :

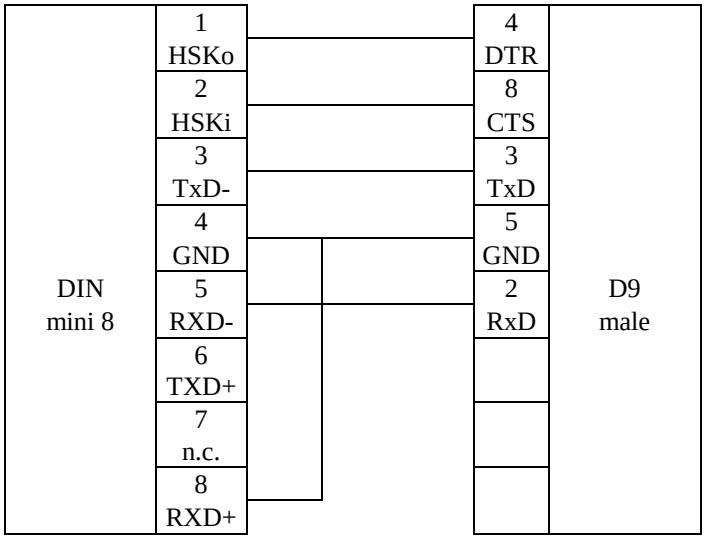
Pin #	Name	Full name
1	CD	Carrier Detect
2	RxD	Received Data
3	TxD	Transmitted Data
4	DTR	Data Terminal Ready
5	GND	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

- Cable (IBM PC or compatible projector) :



order number R9827560 (cable length = 15m)
order number R9827570 (cable length = 30m)

- Cable (MAC projector) :



order number R9827640 (D9-DIN mini8; cable length = 1m)
order number R9827560 (D9-D9; cable length = 15m)
order number R9827570 (D9-D9; cable length = 30m)

- Signal levels :

State	Voltage
off = 1	-9V
on = 0	+9V

- Characters :

  In this manual, all characters are expressed using the C-language syntax :

decimal values	*ddd*	*ddd* = 0..255
hexadecimal values	\x*hh*	*hh* = 00..ff

- Negative values/numbers :

  The 2s complement number system is used to express negative numbers.

- Pascal-language string :

  A Pascal-language string consists of one or more characters. The first character of the string contains the length of the string. Therefore, a Pascal-language string is limited to 255 characters.
  Example : "hello world"

length	\x0b
'h'	\x68
'e'	\x65
'l'	\x6c
'l'	\x6c
'o'	\x6f
' '	\x20
'w'	\x77
'o'	\x6f
'r'	\x72
'l'	\x6c
'd'	\x64

- C-language string :

  A C-language string consists of one or more characters. The last character of the string is always the NULL (\x00) character. Therefore, the length of a C-language string is determined by the position of the NULL character.
  Example : "hello world"

'h'	\x68
'e'	\x65
'l'	\x6c
'l'	\x6c
'o'	\x6f
' '	\x20
'w'	\x77
'o'	\x6f
'r'	\x72
'l'	\x6c
'd'	\x64
NULL	\x00

■ Filename

A filename is specified as a C-language string. This string has to follow some rules :

Filename

0	1	2	3	4	5	6	7	8	9	10	11	12
x	x	x	x	x	x	x	x	.	y	z	z	NULL

- length string = 12
- x = character of the base name (= 8 characters)

'a'	'b'	'c'	'd'	'e'	'f'	'g'	'h'	'i'	'j'
'k'	'l'	'm'	'n'	'o'	'p'	'q'	'r'	's'	't'
'u'	'v'	'w'	'x'	'y'	'z'	'0'	'1'	'2'	'3'
'4'	'5'	'6'	'7'	'8'	'9'	'_'	'-'	' '	

- y = kind of file (= 1 character)

's'	standard file predefined file stored in read-only memory
'c'	custom file file created by the user and stored in non-volatile read-write memory

- z = file index (= 2 characters)

'0'	'1'	'2'	'3'	'4'	'5'	'6'	'7'	'8'	'9'

- zz specifies the location in memory where the file is stored
- for standard files : zz = 00..maximum standard files
- for custom files : zz = 00..63 where 00 is reserved for the file 'none .c00' (file loaded when no signal is applied).

- yzz is a unique combination. In other words, no two files can exist with the same extension yzz.

To specify more than one file you can use the question mark (?) wildcard character for x, y and z. This wildcard character can represent any possible character on that location.
Examples : "ntsc .c01", "svga_60v.s?7", "????????.???"

3. Elementary commands

- Description :

  Decrement balance.

- Command :

Command[0]	\x23
Command[1]	\x0a

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Decrement balance of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x0a
Checksum	\x2e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment balance.

- Command :

Command[0]	\x22
Command[1]	\x0a

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Increment balance of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x0a
Checksum	\x2d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement bass.

- Command :

Command[0]	\x23
Command[1]	\x08

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Decrement bass of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x08
Checksum	\x2c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment bass.

- Command :

Command[0]	\x22
Command[1]	\x08

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Increment bass of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x08
Checksum	\x2b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement brightness.

- Command :

Command[0]	\x04

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Decrement the brightness of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x04
Checksum	\x05
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment brightness.

- Command :

Command[0]	\x03

- Data :

  No data bytes.

- Example :

  Increment the brightness of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x03
Checksum	\x04
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement color (saturation).

- Command :

Command[0]	\x06

- Data :

  No data bytes.

- Example :

  Decrement the color of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x06
Checksum	\x07
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment color (saturation).

- Command :

Command[0]	\x05

- Data :

  No data bytes.

- Example :

  Increment the color of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x05
Checksum	\x06
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement contrast.

- Command :

Command[0]	\x02

- Data :

  No data bytes.

- Example :

  Decrement contrast of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x02
Checksum	\x03
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment contrast.

- Command :

Command[0]	\x01

- Data :

  No data bytes.

- Example :

  Increment contrast of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x01
Checksum	\x02
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Simulation of the infrared remote control unit.
  The codes act in the same way as if they were sent by an infrared remote control unit or the local keypad.

- Command :

Command[0]	\x30

- Data :

  Possible codes used for Data[0] :

Key	Data[0]
*	\x77
0	\x19
1	\x10
2	\x11
3	\x12
4	\x13
5	\x14
6	\x15
7	\x16
8	\x17
9	\x18
ADDR	\x20
ADJUST	\x09
ARROW DOWN	\x05
ARROW LEFT	\x07
ARROW RIGHT	\x06
ARROW UP	\x04
BALANCE+	\x3e
BALANCE-	\x3f

BASS+	\x3a
BASS-	\x3b
BRIGHTNESS	\x27
BRIGHTNESS+	\x2a
BRIGHTNESS-	\x2b
COLOR	\x30
COLOR+	\x2c
COLOR-	\x2d
CONTRAST	\x25
CONTRAST+	\x28
CONTRAST-	\x29
ENTER	\x0a
EXIT	\x08
FREEZ	\x1b
HELP	\x1e
MUTE	\x1f
PAUSE	\x0f
PHASE	\x32
PHASE+	\x34
PHASE-	\x35
SHARPNESS	\x33
SHARPNESS+	\x36
SHARPNESS-	\x37
STDBY	\x0e
TEXT	\x0d
TINT	\x31
TINT+	\x2e
TINT-	\x2f
TREBLE+	\x3c
TREBLE-	\x3d
VOLUME+	\x38
VOLUME-	\x39

- Example :

  Select source 3 of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x30
Data[0]	\x12
Checksum	\x43
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the status of mute audio.

- Command :

Command[0]	\x21
Command[1]	\x3d

- Data :

  No data bytes.

- Return data :

  Data[0] = status mute audio.

Mute audio	Data[0]
Disabled	\x00
Enabled	\x01

- Projector type :

  All projectors with audio control.

- Example :

  Read the status of mute audio of a projector with address \x01. Suppose the audio is muted.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x3d
Checksum	\x5f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x3d
Data[0]	\x01
Checksum	\x60
Stop	\xff

- Description :

  Disable audio mute.

- Command :

Command[0]	\x26
Command[1]	\x3d

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Disable audio mute of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x26
Command[1]	\x3d
Checksum	\x64
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Enable audio mute.

- Command :

Command[0]	\x27
Command[1]	\x3d

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Enable audio mute of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x27
Command[1]	\x3d
Checksum	\x65
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the status of mute video.

- Command :

Command[0]	\x21
Command[1]	\x3e

- Data :

  No data bytes.

- Return data :

  Data[0] = status mute video.

Mute audio	Data[0]
Disabled	\x00
Enabled	\x01

- Example :

  Read the status of mute video of a projector with address \x01. Suppose the video is muted.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x3e
Checksum	\x60
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x3e
Data[0]	\x01
Checksum	\x61
Stop	\xff

- Description :

  Disable video mute.

- Command :

Command[0]	\x26
Command[1]	\x3e

- Data :

  No data bytes.

- Example :

  Disable video mute of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x26
Command[1]	\x3e
Checksum	\x65
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Enable video mute.
  The on-screen-display will be muted too !

- Command :

Command[0]	\x27
Command[1]	\x3e

- Data :

  No data bytes.

- Example :

  Enable video mute of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x27
Command[1]	\x3e
Checksum	\x66
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement phase.

- Command :

Command[0]	\x0c

- Data :

  No data bytes.

- Example :

  Decrement phase of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x0c
Checksum	\x0d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment phase.

- Command :

Command[0]	\x0b

- Data :

  No data bytes.

- Example :

  Increment phase of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x0b
Checksum	\x0c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the projector status.

- Command :

Command[0]	\x67

- Data :

  No data bytes.

- Return data :

  The return data consists of one data byte containing the projector status. Only bit0 (least significant bit) to bit3/bit4* are significant.

bit#	bit = 0	bit = 1
bit0	projector is off	projector is on
bit1	text is off	text is on
bit2	video mute is off	video mute is on
bit3	picture is not frozen	picture is frozen
bit4*	no 800-peripheral connected	800-peripheral connected

* : bit 4 is not significant for BD5000, BD8000 and BD8000LC.

- Example :

  Read the status of a projector with address \x01.
  Suppose the status is projector on, text on, video mute off, picture frozen and no 800-peripheral connected.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x67
Checksum	\x68
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x67
Data[0]	\x0b
Checksum	\x73
Stop	\xff

- Description :

  Set the projector off.

- Command :

Command[0]	\x66

- Data :

  No data bytes.

- Example :

  Set the projector with address \x01 off.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x66
Checksum	\x67
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set the projector on.

- Command :

Command[0]	\x65

- Data :

  No data bytes.

- Example :

  Set the projector with address \x01 on.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x65
Checksum	\x66
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement sharpness.

- Command :

Command[0]	\x0a

- Data :

  No data bytes.

- Example :

  Decrement sharpness of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x0a
Checksum	\x0b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment sharpness.

- Command :

Command[0]	\x09

- Data :

  No data bytes.

- Example :

  Increment sharpness of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x09
Checksum	\x0a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read active source or slot.

- Command :

Command[0]	\x32

- Data :

  No data bytes.

- Return data :

  Source or slot number (\x01..).

- Example :

  Read the active source/slot number of a projector with address \x01. Suppose the answer is \x03.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x32
Checksum	\x33
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x32
Data[0]	\x03
Checksum	\x36
Stop	\xff

- Description :

  Select a source or slot.

- Command :

Command[0]	\x31

- Data :

  Source or slot number (\x01..).

- Example :

  Select source 1 of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x31
Data[0]	\x01
Checksum	\x33
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement tint (hue).

- Command :

Command[0]	\x08

- Data :

  No data bytes.

- Example :

  Decrement tint of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x08
Checksum	\x09
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment tint (hue).

- Command :

Command[0]	\x07

- Data :

  No data bytes.

- Example :

  Increment tint of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x07
Checksum	\x08
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement treble.

- Command :

Command[0]	\x23
Command[1]	\x09

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Decrement treble of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x09
Checksum	\x2d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment treble.

- Command :

Command[0]	\x22
Command[1]	\x09

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Increment treble of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x09
Checksum	\x2c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement volume.

- Command :

Command[0]	\x23
Command[1]	\x07

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Decrement volume of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x07
Checksum	\x2b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment volume.

- Command :

Command[0]	\x22
Command[1]	\x07

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Increment volume of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x07
Checksum	\x2a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

4. Advanced commands

- Description :

  Read the configuration of the 800-peripheral output module.

- Command :

Command[0]	\xf2
Command[1]	\x81

- Data :

  No data bytes.

- Return data :

  Data[0] = configuration.

Output module configuration	Data[0]
Standard	\x00
5 Cable	\x01

- Example :

  Read the configuration of the 800-peripheral output module of a projector with address \x01. Suppose it indicates to be “Standard”.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf2
Command[1]	\x81
Checksum	\x74
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\xf2
Command[1]	\x81
Data[0]	\x00
Checksum	\x74
Stop	\xff

- Description :

  Set-up the configuration of the 800-peripheral output module.

- Command :

Command[0]	\xf2
Command[1]	\x01

- Data :

  Data[0] = configuration.

Output module configuration	Data[0]
Standard	\x00
5 Cable	\x01

- Example :

  Configure the 800-peripheral output module to be “Standard” of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf2
Command[1]	\x01
Data[0]	\x00
Checksum	\xf4
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual balance value.

- Command :

Command[0]	\x21
Command[1]	\x0a

- Data :

  No data bytes.

- Return data :

  Data[0] = balance value.

- Projector type :

  All projectors with audio control.

- Example :

  Read the actual balance value of a projector with address \x01. Suppose the balance equals \xeb (= -21).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x0a
Checksum	\x2c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x0a
Data[0]	\xeb
Checksum	\x17
Stop	\xff

- Description :

  Write a new balance value.

- Command :

Command[0]	\x20
Command[1]	\x0a

- Data :

  Data[0] = balance value.

- Projector type :

  All projectors with audio control.

- Example :

  Set the balance to \xeb (= -21) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x0a
Data[0]	\xeb
Checksum	\x16
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual bass value.

- Command :

Command[0]	\x21
Command[1]	\x08

- Data :

  No data bytes.

- Return data :

  Data[0] = bass value.

- Projector type :

  All projectors with audio control.

- Example :

  Read the actual bass value of a projector with address \x01. Suppose the bass equals \x01 (= +1).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x08
Checksum	\x2a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x08
Data[0]	\x01
Checksum	\x2b
Stop	\xff

- Description :

  Write a new bass value.

- Command :

Command[0]	\x20
Command[1]	\x08

- Data :

  Data[0] = bass value.

- Projector type :

  All projectors with audio control.

- Example :

  Set the bass to \x01 (= +1) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x08
Data[0]	\x01
Checksum	\x2a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Change de pc baudrate.

- Command :

Command[0]	\x75

- Data :

Data[]	c-language string

- Notes :

  - The acknowledge is sent at the same baudrate as the question. The baudrate will be changed after transmission of the acknowledge sequence.
  - If the data contains a non-valid c-language string or an invalid baudrate, the baudrate will be set to 9600.

- Example :

  Change the pc baudrate to 2400 baud of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x75
Data[0]	\x32 (= '2')
Data[1]	\x34 (= ‘4’)
Data[2]	\x30 (= ‘0’)
Data[3]	\x30 (= ‘0’)
Data[4]	\x00
Checksum	\x3c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement blanking bottom.

- Command :

Command[0]	\x23
Command[1]	\x4d

- Data :

  No data bytes.

- Example :

  Decrement blanking bottom of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x4d
Checksum	\x71
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment blanking bottom.

- Command :

Command[0]	\x22
Command[1]	\x4d

- Data :

  No data bytes.

- Example :

  Increment blanking bottom of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x4d
Checksum	\x70
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of blanking bottom.

- Command :

Command[0]	\x21
Command[1]	\x4d

- Data :

  No data bytes.

- Return data :

  Data[0..1] = value of blanking bottom.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the actual value of blanking bottom of a projector with address \x01. Suppose the blanking bottom equals 0.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x4d
Checksum	\x6f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x4d
Data[0]	\x00
Data[1]	\x00
Checksum	\x6f
Stop	\xff

- Description :

  Write a new value for blanking bottom.

- Command :

Command[0]	\x20
Command[1]	\x4d

- Data :

  Data[0..1] = value of blanking bottom.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the blanking bottom to 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x4d
Data[0]	\x00
Data[1]	\x00
Checksum	\x6e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement blanking left.

- Command :

Command[0]	\x23
Command[1]	\x4e

- Data :

  No data bytes.

- Example :

  Decrement blanking left of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x4e
Checksum	\x72
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment blanking left.

- Command :

Command[0]	\x22
Command[1]	\x4e

- Data :

  No data bytes.

- Example :

  Increment blanking left of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x4e
Checksum	\x71
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of blanking left.

- Command :

Command[0]	\x21
Command[1]	\x4e

- Data :

  No data bytes.

- Return data :

  Data[0..1] = value of blanking left.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the actual value of blanking left of a projector with address \x01. Suppose the blanking left equals 0.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x4e
Checksum	\x70
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x4e
Data[0]	\x00
Data[1]	\x00
Checksum	\x70
Stop	\xff

- Description :

  Write a new value for blanking left.

- Command :

Command[0]	\x20
Command[1]	\x4e

- Data :

  Data[0..1] = value of blanking left.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the blanking left to 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x4e
Data[0]	\x00
Data[1]	\x00
Checksum	\x6f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement blanking right.

- Command :

Command[0]	\x23
Command[1]	\x4f

- Data :

  No data bytes.

- Example :

  Decrement blanking right of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x4f
Checksum	\x73
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment blanking right.

- Command :

Command[0]	\x22
Command[1]	\x4f

- Data :

  No data bytes.

- Example :

  Increment blanking right of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x4f
Checksum	\x72
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of blanking right.

- Command :

Command[0]	\x21
Command[1]	\x4f

- Data :

  No data bytes.

- Return data :

  Data[0..1] = value of blanking right.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the actual value of blanking right of a projector with address \x01. Suppose the blanking right equals 0.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x4f
Checksum	\x71
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x4f
Data[0]	\x00
Data[1]	\x00
Checksum	\x71
Stop	\xff

- Description :

  Write a new value for blanking right.

- Command :

Command[0]	\x20
Command[1]	\x4f

- Data :

  Data[0..1] = value of blanking right.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the blanking right to 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x4f
Data[0]	\x00
Data[1]	\x00
Checksum	\x70
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement blanking top.

- Command :

Command[0]	\x23
Command[1]	\x4c

- Data :

  No data bytes.

- Example :

  Decrement blanking top of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x4c
Checksum	\x70
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment blanking top.

- Command :

Command[0]	\x22
Command[1]	\x4c

- Data :

  No data bytes.

- Example :

  Increment blanking top of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x4c
Checksum	\x6f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of blanking top.

- Command :

Command[0]	\x21
Command[1]	\x4c

- Data :

  No data bytes.

- Return data :

  Data[0..1] = value of blanking top.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the actual value of blanking top of a projector with address \x01. Suppose the blanking top equals 0.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x4c
Checksum	\x6e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x4c
Data[0]	\x00
Data[1]	\x00
Checksum	\x6e
Stop	\xff

- Description :

  Write a new value for blanking top.

- Command :

Command[0]	\x20
Command[1]	\x4c

- Data :

  Data[0..1] = value of blanking top.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the blanking top to 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x4c
Data[0]	\x00
Data[1]	\x00
Checksum	\x6d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual brightness value.

- Command :

Command[0]	\x21
Command[1]	\x02

- Data :

  No data bytes.

- Return data :

  Data[0] = brightness value.

- Example :

  Read the actual brightness value of a projector with address \x01. Suppose the brightness equals \x20.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x02
Checksum	\x24
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x02
Data[0]	\x20
Checksum	\x44
Stop	\xff

- Description :

  Write a new brightness value.

- Command :

Command[0]	\x20
Command[1]	\x02

- Data :

  Data[0] = brightness value.

- Example :

  Set the brightness to \x20 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x02
Data[0]	\x20
Checksum	\x43
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the clamp delay.

- Command :

Command[0]	\x23
Command[1]	\x67

- Data :

  No data bytes.

- Example :

  Decrement the clamp delay of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x67
Checksum	\x8b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the clamp delay.

- Command :

Command[0]	\x22
Command[1]	\x67

- Data :

  No data bytes.

- Example :

  Increment the clamp delay of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x67
Checksum	\x8a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the clamp delay.

- Command :

Command[0]	\x21
Command[1]	\x67

- Data :

  No data bytes.

- Return data :

  Data[0] = value of the clamp delay.

- Example :

  Read the actual value of the clamp delay of a projector with address \x01. Suppose the clamp delay equals \x00.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x67
Checksum	\x89
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x67
Data[0]	\x00
Checksum	\x89
Stop	\xff

- Description :

  Write a new value for the clamp delay.

- Command :

Command[0]	\x20
Command[1]	\x67

- Data :

  Data[0] = value of the clamp delay.

- Example :

  Set the clamp delay to \x00 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x67
Data[0]	\x00
Checksum	\x88
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the clamp edge.

- Command :

Command[0]	\x21
Command[1]	\x66

- Data :

  No data bytes.

- Return data :

  Data[0] = value of the clamp edge.

	Data[0]
Leading	\x00
Trailing	\x01

- Example :

  Read the actual value of the clamp edge of a projector with address \x01. Suppose the clamp edge is leading.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x66
Checksum	\x88
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x66
Data[0]	\x00
Checksum	\x88
Stop	\xff

- Description :

  Set the clamp edge to leading.

- Command :

Command[0]	\x26
Command[1]	\x66

- Data :

  No data bytes.

- Example :

  Set the clamp edge to leading on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x26
Command[1]	\x66
Checksum	\x8d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set the clamp edge to trailing.

- Command :

Command[0]	\x27
Command[1]	\x66

- Data :

  No data bytes.

- Example :

  Set the clamp edge to trailing on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x27
Command[1]	\x66
Checksum	\x8e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the clamp width.

- Command :

Command[0]	\x23
Command[1]	\x68

- Data :

  No data bytes.

- Example :

  Decrement the clamp width of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x68
Checksum	\x8c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the clamp width.

- Command :

Command[0]	\x22
Command[1]	\x68

- Data :

  No data bytes.

- Example :

  Increment the clamp width of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x68
Checksum	\x8b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the clamp width.

- Command :

Command[0]	\x21
Command[1]	\x68

- Data :

  No data bytes.

- Return data :

  Data[0] = value of the clamp width.

- Example :

  Read the actual value of the clamp width of a projector with address \x01. Suppose the clamp width equals \x32.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x68
Checksum	\x8a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x68
Data[0]	\x32
Checksum	\xbc
Stop	\xff

- Description :

  Write a new value for the clamp width.

- Command :

Command[0]	\x20
Command[1]	\x68

- Data :

  Data[0] = value of the clamp width.

- Example :

  Set the clamp width to \x32 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x68
Data[0]	\x32
Checksum	\xbb
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual color (saturation) value.

- Command :

Command[0]	\x21
Command[1]	\x03

- Data :

  No data bytes.

- Return data :

  Data[0] = color value.

- Example :

  Read the actual color value of a projector with address \x01. Suppose the color equals \x20.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x03
Checksum	\x25
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x03
Data[0]	\x20
Checksum	\x45
Stop	\xff

- Description :

  Write a new color (saturation) value.

- Command :

Command[0]	\x20
Command[1]	\x03

- Data :

  Data[0] = color value.

- Example :

  Set the color to \x20 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x03
Data[0]	\x20
Checksum	\x44
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the actual color balance.

- Command (color balance red/green) :

Command[0]	\x23
Command[1]	\x43

  Command (color balance blue/green) :

Command[0]	\x23
Command[1]	\x44

- Data :

  No data bytes.

- Example :

  Decrement the color balance red/green on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x43
Checksum	\x67
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the actual color balance.

- Command (color balance red/green) :

Command[0]	\x22
Command[1]	\x43

  Command (color balance blue/green) :

Command[0]	\x22
Command[1]	\x44

- Data :

  No data bytes.

- Example :

  Increment the color balance red/green on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x43
Checksum	\x66
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the color balance.

- Command (color balance red/green) :

Command[0]	\x21
Command[1]	\x43

  Command (color balance blue/green) :

Command[0]	\x21
Command[1]	\x44

- Data (only in case of reading the color balance of a specified color temperature) :

  Data[0] = color temperature.

Data[0]	
0	"PROJECTOR WHITE"
1	custom color balance derived from "PROJECTOR WHITE"
2	custom color balance derived from 3200, 5400, 6500 or 9300
32	3200
54	5400
65	6500
93	9300

- Return data :

  Data[0] = value of color balance multiplied by 100.

Data[0]	\x00..\xfa

Example : Data[0]=\x64 equals 1.00

- Example :

  Read the color balance red/green of a projector with address \x01. Suppose the color balance equals 1.00.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x43
Checksum	\x65
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x43
Data[0]	\x64
Checksum	\xc9
Stop	\xff

- Description :

  Write the actual color balance.

- Command (color balance red/green) :

Command[0]	\x20
Command[1]	\x43

  Command (color balance blue/green) :

Command[0]	\x20
Command[1]	\x44

- Data :

  Data[0] = value of color balance multiplied by 100.

Data[0]	\x00..\xfa

  Example : Data[0]=\x64 equals 1.00

- Example :

  Set the color balance red/green to 1.00 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x43
Data[0]	\x64
Checksum	\xc8
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actural color temperature.

- Command (color balance red/green) :

Command[0]	\x21
Command[1]	\x45

- Data :

  No data bytes.

- Return data :

  Data[0] = color temperature.

Data[0]	
0	"PROJECTOR WHITE"
1	custom color balance derived from "PROJECTOR WHITE"
2	custom color balance derived from 3200, 5400, 6500 or 9300
32	3200
54	5400
65	6500
93	9300

- Example :

  Read the actual color temperature of a projector with address \x01. Suppose the color temperature equals 6500.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x45
Checksum	\x67
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x45
Data[0]	\x41
Checksum	\xa8
Stop	\xff

- Description :

  Write the color temperature.

- Command :

Command[0]	\x20
Command[1]	\x45

- Data :

  Data[0] = color temperature.

Data[0]	
0	"PROJECTOR WHITE"
1	custom color balance derived from "PROJECTOR WHITE"
2	custom color balance derived from 3200, 5400, 6500 or 9300
32	3200
54	5400
65	6500
93	9300

- Example :

  Set the color temperature to 6500 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x45
Data[0]	\x41
Checksum	\xa7
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual contrast value.

- Command :

Command[0]	\x21
Command[1]	\x01

- Data :

  No data bytes.

- Return data :

  Data[0] = contrast value.

- Example :

  Read the actual contrast value of a projector with address \x01. Suppose the contrast equals \x30.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x01
Checksum	\x23
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x01
Data[0]	\x30
Checksum	\x53
Stop	\xff

- Description :

  Write a new contrast value.

- Command :

Command[0]	\x20
Command[1]	\x01

- Data :

  Data[0] = contrast value.

- Example :

  Set the contrast to \x30 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x01
Data[0]	\x30
Checksum	\x52
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement dimming.

- Command :

Command[0]	\x23
Command[1]	\x0d

- Data :

  No data bytes.

- Projector type :

  Please verify the Owner's Manual of the projector if the dimming feature is supported.

- Example :

  Decrement dimming of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x0d
Checksum	\x31
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment dimming.

- Command :

Command[0]	\x22
Command[1]	\x0d

- Data :

  No data bytes.

- Projector type :

  Please verify the Owner's Manual of the projector if the dimming feature is supported.

- Example :

  Increment dimming of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x0d
Checksum	\x30
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the dimming value.

- Command :

Command[0]	\x21
Command[1]	\x0d

- Data :

  No data bytes.

- Return data :

  Data[0] = dimming value.

- Projector type :

  Please verify the Owner's Manual of the projector if the dimming feature is supported.

- Example :

  Read the dimming value of a projector with address \x01. Suppose the dimming equals \x07.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x0d
Checksum	\x2f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x0d
Data[0]	\x07
Checksum	\x36
Stop	\xff

- Description :

  Decrement the fade value. The audio volume level of the external speaker(s) will decrease or the audio volume of the internal speaker(s) will increase.

- Command :

Command[0]	\x23
Command[1]	\x5f

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Decrement the fade value of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x5f
Checksum	\x83
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the fade value. The audio volume level of the external speaker(s) will increase or the audio volume of the internal speaker(s) will decrease.

- Command :

Command[0]	\x22
Command[1]	\x5f

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Increment the fade value of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x5f
Checksum	\x82
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual fade value.

- Command :

Command[0]	\x21
Command[1]	\x5f

- Data :

  No data bytes.

- Return data :

  Data[0] = fade value.

- Projector type :

  All projectors with audio control.

- Example :

  Read the actual fade value of a projector with address \x01. Suppose the value equals -15 (\xf1).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5f
Checksum	\x81
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5f
Data[0]	\xf1
Checksum	\x72
Stop	\xff

- Description :

  Write a new fade value.

- Command :

Command[0]	\x20
Command[1]	\x5f

- Data :

  Data[0] = fade value.

- Projector type :

  All projectors with audio control.

- Example :

  Set the fade value to -15 (\xf1) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x5f
Data[0]	\xf1
Checksum	\x71
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the fade value of the external speaker(s). The audio volume level of the external speaker(s) will decrease.

- Command :

Command[0]	\x23
Command[1]	\x41

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Decrement the fade value of the external speaker(s) of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x41
Checksum	\x65
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the fade value of the external speaker(s). The audio volume level of the external speaker(s) will increase.

- Command :

Command[0]	\x22
Command[1]	\x41

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Increment the fade value of the external speaker of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x41
Checksum	\x64
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual fade value of the external speaker(s).

- Command :

Command[0]	\x21
Command[1]	\x41

- Data :

  No data bytes.

- Return data :

  Data[0] = fade value.

- Projector type :

  All projectors with audio control.

- Example :

  Read the actual fade value of the external speaker(s) of a projector with address \x01. Suppose the value equals 15.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x41
Checksum	\x63
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x41
Data[0]	\x0f
Checksum	\x72
Stop	\xff

- Description :

  Write a new fade value for the extern speaker(s).

- Command :

Command[0]	\x20
Command[1]	\x41

- Data :

  Data[0] = fade value.

- Projector type :

  All projectors with audio control.

- Example :

  Set the fade value for the external speaker(s) to \x0f on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x41
Data[0]	\x0f
Checksum	\x71
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the fade value of the internal speaker. The audio volume level of the internal speaker will decrease.

- Command :

Command[0]	\x23
Command[1]	\x40

- Data :

  No data bytes.

- Projector type :

  All projectors with audio control.

- Example :

  Decrement the fade value of the internal speaker of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x40
Checksum	\x64
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the fade value of the internal speaker. The audio volume level of the internal speaker will increase.

- Command :

Command[0]	\x22
Command[1]	\x40

- Data :

  No data bytes.

- Example :

  Increment the fade value of the internal speaker of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x40
Checksum	\x63
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual fade value of the internal speaker.

- Command :

Command[0]	\x21
Command[1]	\x40

- Data :

  No data bytes.

- Return data :

  Data[0] = fade value.

- Projector type :

  All projectors with audio control.

- Example :

  Read the actual fade value of the internal speaker of a projector with address \x01. Suppose the value equals 15.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x40
Checksum	\x62
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x40
Data[0]	\x0f
Checksum	\x71
Stop	\xff

- Description :

  Write a new fade value for the intern speaker.

- Command :

Command[0]	\x20
Command[1]	\x40

- Data :

  Data[0] = fade value.

- Projector type :

  All projectors with audio control.

- Example :

  Set the fade value for the internal speaker to \x0f on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x40
Data[0]	\x0f
Checksum	\x70
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actial position of field polarity.

- Command :

Command[0]	\x21
Command[1]	\x62

- Data :

  No data bytes.

- Return data :

  Data[0] = field polarity.

	Data[0]
Negative	\x00
Positive	\x01
Automatic	\x02

- Example :

  Read the actual field polarity of a projector with address \x01. Suppose there is automatic installation of the field polarity.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x62
Checksum	\x84
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x62
Data[0]	\x02
Checksum	\x86
Stop	\xff

- Description :

  Change the field polarity value.

- Command :

Command[0]	\x20
Command[1]	\x62

- Data :

  Data[0] = field polarity.

	Data[0]
Negative	\x00
Positive	\x01
Automatic	\x02

- Example :

  Set the field polarity to automatic on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x62
Data[0]	\x02
Checksum	\x85
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read what field is actualy selected.

- Command :

Command[0]	\x21
Command[1]	\x63

- Data :

  No data bytes.

- Return data :

  Data[0] = selected field.

	Data[0]
Even	\x00
Odd	\x01
Both	\x02

- Example :

  Read the actual selected field of a projector with address \x01. Suppose both fields are displayed.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x63
Checksum	\x85
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x63
Data[0]	\x02
Checksum	\x87
Stop	\xff

- Description :

  Change the field selection.
  (Only in case of interlaced images.)

- Command :

Command[0]	\x20
Command[1]	\x63

- Data :

  Data[0] = field selection.

	Data[0]
Even	\x00
Odd	\x01
Both	\x02

- Example :

  Select both fields on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x63
Data[0]	\x02
Checksum	\x86
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Copy file1 to file2.
  - File2 (destination file) has to be a custom file.
  - If the location specified by the "file index" of file2 has already been taken up, file2 will overwrite that contents.
  - If file1 and file2 point to the same location, the base name of file1 is replaced by the base name of file2 without affecting other data.

- Command :

Command[0]	\xc2

- Data :

  From filename followed by the to filename (no wildcards allowed).

- Example :

  Copy the file "ntsc .c01" to "camera1 .c05" on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xc2
Data[0]	\x6e (= 'n')
Data[1]	\x74 (= 't')
Data[2]	\x73 (= 's')
Data[3]	\x63 (= 'c')
Data[4]	\x20 (= ' ')
Data[5]	\x20 (= ' ')
Data[6]	\x20 (= ' ')
Data[7]	\x20 (= ' ')
Data[8]	\x2e (= '.')
Data[9]	\x63 (= 'c')
Data[10]	\x30 (= '0')
Data[11]	\x31 (= '1')
Data[12]	\x00
Data[13]	\x63 (= 'c')
Data[14]	\x61 (= 'a')
Data[15]	\x6d (= 'm')
Data[16]	\x65 (= 'e')
Data[17]	\x72 (= 'r')
Data[18]	\x61 (= 'a')
Data[19]	\x31 (= '1')
Data[20]	\x20 (= ' ')
Data[21]	\x2e (= '.')
Data[22]	\x63 (= 'c')
Data[23]	\x30 (= '0')
Data[24]	\x35 (= '5')
Data[25]	\x00
Checksum	\x9d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Delete one or more files.
  - Only custom files (????????.c??) can be deleted.

- Command :

Command[0]	\xc1

- Data :

  One or more filenames (wildcards allowed).

- Example :

  Delete all files starting with the characters "nt" on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xc1
Data[0]	\x6e (= 'n')
Data[1]	\x74 (= 't')
Data[2]	\x3f (= '?')
Data[3]	\x3f (= '?')
Data[4]	\x3f (= '?')
Data[5]	\x3f (= '?')
Data[6]	\x3f (= '?')
Data[7]	\x3f (= '?')
Data[8]	\x2e (= '.')
Data[9]	\x3f (= '?')
Data[10]	\x3f (= '?')
Data[11]	\x3f (= '?')
Data[12]	\x00
Checksum	\x09
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Get a list of files.

- Command :

Command[0]	\xc0

- Data :

  One or more filenames (wildcards allowed).

- Example :

  Get a list of all files starting with the characters "nt" on a projector with address \x01. Suppose there are 2 files : "ntsc .s02" and "ntsc_rgb.c01".

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xc0
Data[0]	\x6e (= 'n')
Data[1]	\x74 (= 't')
Data[2]	\x3f (= '?')
Data[3]	\x3f (= '?')
Data[4]	\x3f (= '?')
Data[5]	\x3f (= '?')
Data[6]	\x3f (= '?')
Data[7]	\x3f (= '?')
Data[8]	\x2e (= '.')
Data[9]	\x3f (= '?')
Data[10]	\x3f (= '?')
Data[11]	\x3f (= '?')
Data[12]	\x00
Checksum	\x08
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\xc0
Data[0]	\x6e (= 'n')
Data[1]	\x74 (= 't')
Data[2]	\x73 (= 's')
Data[3]	\x63 (= 'c')
Data[4]	\x20 (= ' ')
Data[5]	\x20 (= ' ')
Data[6]	\x20 (= ' ')
Data[7]	\x20 (= ' ')
Data[8]	\x2e (= '.')
Data[9]	\x73 (= 's')
Data[10]	\x30 (= '0')
Data[11]	\x32 (= '2')
Data[12]	\x00
Data[13]	\x6e (= 'n')
Data[14]	\x74 (= 't')
Data[15]	\x73 (= 's')
Data[16]	\x63 (= 'c')
Data[17]	\x5f (= '_')
Data[18]	\x72 (= 'r')
Data[19]	\x67 (= 'g')
Data[20]	\x62 (= 'b')
Data[21]	\x2e (= '.')
Data[22]	\x63 (= 'c')
Data[23]	\x30 (= '0')
Data[24]	\x31 (= '1')
Data[25]	\x00
Checksum	\x40
Stop	\xff

- Description :

  Get the filename of the active file.

- Command :

Command[0]	\xc5

- Data :

  No data bytes.

- Example :

  Get the filename of the active file on a projector with address \x01. Suppose the filename is "ntsc .c01".

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xc5
Checksum	\xc6
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\xc5
Data[0]	\x6e (= 'n')
Data[1]	\x74 (= 't')
Data[2]	\x73 (= 's')
Data[3]	\x63 (= 'c')
Data[4]	\x20 (= ' ')
Data[5]	\x20 (= ' ')
Data[6]	\x20 (= ' ')
Data[7]	\x20 (= ' ')
Data[8]	\x2e (= '.')
Data[9]	\x63 (= 'c')
Data[10]	\x30 (= '0')
Data[11]	\x31 (= '1')
Data[12]	\x00
Checksum	\xf0
Stop	\xff

- Description :

  Move file1 to file2.
  - Only custom files can be moved.
  - If the location specified by the "file index" of file2 has already been taken up, file2 will overwrite that contents.
  - If file1 and file2 point to the same location, the base name of file1 is replaced by the base name of file2 without affecting other data.

- Command :

Command[0]	\xc4

- Data :

  From filename followed by the to filename (no wildcards allowed).

- Example :

  Move the file "ntsc .c01" to "camera1 .c05" on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xc4
Data[0]	\x6e (= 'n')
Data[1]	\x74 (= 't')
Data[2]	\x73 (= 's')
Data[3]	\x63 (= 'c')
Data[4]	\x20 (= ' ')
Data[5]	\x20 (= ' ')
Data[6]	\x20 (= ' ')
Data[7]	\x20 (= ' ')
Data[8]	\x2e (= '.')
Data[9]	\x63 (= 'c')
Data[10]	\x30 (= '0')
Data[11]	\x31 (= '1')
Data[12]	\x00
Data[13]	\x63 (= 'c')
Data[14]	\x61 (= 'a')
Data[15]	\x6d (= 'm')
Data[16]	\x65 (= 'e')
Data[17]	\x72 (= 'r')
Data[18]	\x61 (= 'a')
Data[19]	\x31 (= '1')
Data[20]	\x20 (= ' ')
Data[21]	\x2e (= '.')
Data[22]	\x63 (= 'c')
Data[23]	\x30 (= '0')
Data[24]	\x35 (= '5')
Data[25]	\x00
Checksum	\x9f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the contents of a file.
  - This command can be used to make a backup of your projector files on your hard disk. Use the command “file, write” to restore those files on your projector.
  - The file contents is compressed and projector-dependent. (It could even be version-dependent.)

- Command :

Command[0]	\xbf

- Data :

  Filename.

- Return data :

  Data[0..12] = filename.
  Data[13] = length of file contents (bytes)
  Data[14..] = file contents

- Example (imaginary) :

  Read the contents of the file "ntsc .c01" on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xbf
Data[0]	\x6e (= 'n')
Data[1]	\x74 (= 't')
Data[2]	\x73 (= 's')
Data[3]	\x63 (= 'c')
Data[4]	\x20 (= ' ')
Data[5]	\x20 (= ' ')
Data[6]	\x20 (= ' ')
Data[7]	\x20 (= ' ')
Data[8]	\x2e (= '.')
Data[9]	\x63 (= 'c')
Data[10]	\x30 (= '0')
Data[11]	\x31 (= '1')
Data[12]	\x00
Checksum	\xea
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\xbf
Data[0]	\x6e (= 'n')
Data[1]	\x74 (= 't')
Data[2]	\x73 (= 's')
Data[3]	\x63 (= 'c')
Data[4]	\x20 (= ' ')
Data[5]	\x20 (= ' ')
Data[6]	\x20 (= ' ')
Data[7]	\x20 (= ' ')
Data[8]	\x2e (= '.')
Data[9]	\x63 (= 'c')
Data[10]	\x30 (= '0')
Data[11]	\x31(= '1)
Data[12]	\x00
Data[13]	\x05
Data[14]	\x56
Data[15]	\x22
Data[16]	\x37
Data[17]	\x19
Data[18]	\x53
Checksum	\x09
Stop	\xff

- Description :

  Rename file1 to file2.
  - Only custom files can be renamed.
  - Only the base name of a file can be renamed. This means that file1 and file2 have to point to the same location (file1 and file2 must have the same "file index")

- Command :

Command[0]	\xc3

- Data :

  Old filename followed by the new filename (no wildcards allowed).

- Example :

  Rename the file "ntsc .c01" to "camera1 .c01" on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xc3
Data[0]	\x6e (= 'n')
Data[1]	\x74 (= 't')
Data[2]	\x73 (= 's')
Data[3]	\x63 (= 'c')
Data[4]	\x20 (= ' ')
Data[5]	\x20 (= ' ')
Data[6]	\x20 (= ' ')
Data[7]	\x20 (= ' ')
Data[8]	\x2e (= '.')
Data[9]	\x63 (= 'c')
Data[10]	\x30 (= '0')
Data[11]	\x31 (= '1')
Data[12]	\x00
Data[13]	\x63 (= 'c')
Data[14]	\x61 (= 'a')
Data[15]	\x6d (= 'm')
Data[16]	\x65 (= 'e')
Data[17]	\x72 (= 'r')
Data[18]	\x61 (= 'a')
Data[19]	\x31 (= '1')
Data[20]	\x20 (= ' ')
Data[21]	\x2e (= '.')
Data[22]	\x63 (= 'c')
Data[23]	\x30 (= '0')
Data[24]	\x31 (= '1')
Data[25]	\x00
Checksum	\x9a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Write the contents of a file.
  - This command can be used to restore files that were previously backed up on your hard disk to your projector. See the command “file, read” for more information on how to backup files to your hard disk.
  - The file contents is compressed and projector-dependent. (It could even be version-dependent.)

- Command :

Command[0]	\xbe

- Data :

  Data[0..12] = filename.
  Data[13] = length of file contents (bytes)
  Data[14..] = file contents

- Example (imaginary) :

  Write the contents of the file "ntsc .c01" on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xbe
Data[0]	\x6e (= 'n')
Data[1]	\x74 (= 't')
Data[2]	\x73 (= 's')
Data[3]	\x63 (= 'c')
Data[4]	\x20 (= ' ')
Data[5]	\x20 (= ' ')
Data[6]	\x20 (= ' ')
Data[7]	\x20 (= ' ')
Data[8]	\x2e (= '.')
Data[9]	\x63 (= 'c')
Data[10]	\x30 (= '0')
Data[11]	\x31 (= '1')
Data[12]	\x00
Data[13]	\x05
Data[14]	\x56
Data[15]	\x22
Data[16]	\x37
Data[17]	\x19
Data[18]	\x53
Checksum	\x09
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the frame delay.

- Command :

Command[0]	\x21
Command[1]	\x65

- Data :

  No data bytes.

- Return data :

  Data[0] = value of the frame delay.

	Data[0]
Off	\x00
On	\x01

- Projector type :

  Please verify the Owner's Manual of the projector if the frame delay is implemented.

- Example :

  Read the actual value of the frame delay of a projector with address \x01. Suppose the frame delay is on.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x65
Checksum	\x87
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x65
Data[0]	\x01
Checksum	\x88
Stop	\xff

- Description :

  Set the frame delay off.

- Command :

Command[0]	\x26
Command[1]	\x65

- Data :

  No data bytes.

- Projector type :

  Please verify the Owner's Manual of the projector if the frame delay is implemented.

- Example :

  Set the frame delay off on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x26
Command[1]	\x65
Checksum	\x8c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set the frame delay on.

- Command :

Command[0]	\x27
Command[1]	\x65

- Data :

  No data bytes.

- Projector type :

  Please verify the Owner's Manual of the projector if the frame delay is implemented.

- Example :

  Set the frame delay on on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x27
Command[1]	\x65
Checksum	\x8d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Disable freeze.

- Command :

Command[0]	\x26
Command[1]	\x23

- Data :

  No data bytes.

- Example :

  Disable freeze of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x26
Command[1]	\x23
Checksum	\x4a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Enable freeze.

- Command :

Command[0]	\x27
Command[1]	\x23

- Data :

  No data bytes.

- Example :

  Enable freeze of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x27
Command[1]	\x23
Checksum	\x4b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement gamma.

- Command :

Command[0]	\x23
Command[1]	\x70

- Data :

  No data bytes.

- Example :

  Decrement the gamma of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x70
Checksum	\x94
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment gamma.

- Command :

Command[0]	\x22
Command[1]	\x70

- Data :

  No data bytes.

- Example :

  Increment the gamma of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x70
Checksum	\x93
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual gamma value.

- Command :

Command[0]	\x21
Command[1]	\x70

- Data :

  No data bytes.

- Return data :

  Data[0] = gamma value.

- Example :

  Read the actual gamma of a projector with address \x01. Suppose the gamma equals \x05 (= 5).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x70
Checksum	\x92
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x70
Data[0]	\x05
Checksum	\x97
Stop	\xff

- Description :

  Write a new gamma value.

- Command :

Command[0]	\x20
Command[1]	\x70

- Data :

  Data[0] = gamma value.

- Example :

  Set the gamma to \x05 (= 5) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x70
Data[0]	\x05
Checksum	\x96
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the horizontal period in nanoseconds.

- Command :

Command[0]	\x21
Command[1]	\x5b

- Data :

  No data bytes.

- Return data :

  Data[0..3] = horizontal period in nanoseconds.

Data[0]	msb of value
Data[1]	
Data[2]	
Data[3]	lsb of value

- Example :

  Read the horizontal period of the active source on a projector with address \x01. Suppose the active file is xga_60 with a horizontal period of 48360 ns.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5b
Checksum	\x7d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5b
Data[0]	\x00
Data[1]	\x00
Data[2]	\xbc
Data[3]	\xe8
Checksum	\x21
Stop	\xff

- Description :

  Write the horizontal period in nanoseconds.

- Command :

Command[0]	\x20
Command[1]	\x5b

- Data :

  Data[0..3] = horizontal period in nanoseconds.

Data[0]	msb of value
Data[1]	
Data[2]	
Data[3]	lsb of value

- Example :

  Set the horizontal period to 48360 ns (xga_60) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x5b
Data[0]	\x00
Data[1]	\x00
Data[2]	\xbc
Data[3]	\xe8
Checksum	\x20
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the information display codes.

- Command :

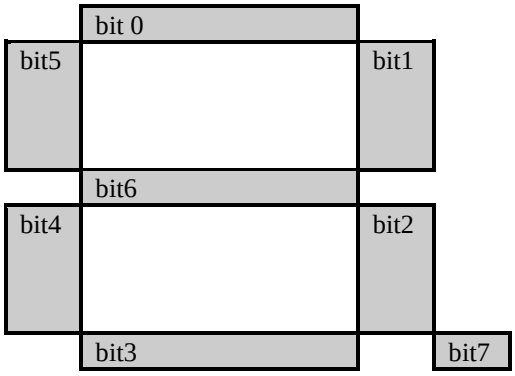
Command[0]	\x73

- Data :

  No data bytes.

- Return data :

Data[0]	high byte
Data[1]	low byte



bit7 = most significant bit

- Example :

  Read the information display of a projector with address \x01. Suppose it shows "F1.".

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x73
Checksum	\x74
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x73
Data[0]	\x71
Data[1]	\x86
Checksum	\x6b
Stop	\xff

- Description :

  Read the status of the infrared ports.

- Command :

Command[0]	\x6f

- Data :

  No data bytes.

- Return data :

  Data[0] = status.

bit#	bit = 0	bit = 1
bit0 (lsb)	receiver front disabled	receiver front enabled
bit1	receiver rear disabled	receiver rear enabled
bit2	no hardwired remote*	hardwired remote

* : when no hardwired remote is connected, bit 0 and bit 1 indicate the previous state of the corresponding receivers. (in reality, they are enabled)

- Example :

  Read the status of the infrared ports of a projector with address \x01. Suppose a hardwired remote is used and the front and rear receiver are enabled.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x6f
Checksum	\x70
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x6f
Data[0]	\x07
Checksum	\x77
Stop	\xff

- Description :

  Enable/Disable one ore more infrared ports.

- Command :

Command[0]	\x6e

- Data :

  Data[0] = status.

bit#	bit = 0	bit = 1
bit0 (lsb)	disable receiver front	enable receiver front
bit1	disable receiver rear	enable receiver rear

* : when no hardwired remote is connected, the receiver front and rear cannot be disabled; so bit0 and bit1 will take effect after a hardwired remote has been connected.

- Example :

  Enable the front and rear receiver of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x6e
Data[0]	\x03
Checksum	\x72
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read installation.

- Command :

Command[0]	\x21
Command[1]	\x24

- Data :

  No data bytes.

- Return data :

  Data[0] = installation.

Installation	Data[0]
Front/Table	\x40
Front/Ceiling	\x80
Rear/Table	\x00
Rear/Ceiling	\xc0

- Example :

  Read installation of a projector with address \x01.
  Suppose the projector is installed in front/ceiling.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x24
Checksum	\x46
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x24
Data[0]	\x80
	\x00
Checksum	\xc6
Stop	\xff

- Description :

  Write installation (front/table, ...).

- Command :

Command[0]	\x20
Command[1]	\x24

- Data :

  Data[0] = installation.

Installation	Data[0]
Front/Table	\x40
Front/Ceiling	\x80
Rear/Table	\x00
Rear/Ceiling	\xc0

- Example :

  Set the installation of a projector with address \x01 to front/ceiling.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x24
Data[0]	\x80
	\x00
Checksum	\xc5
Stop	\xff

- Description :

  Read the actual value of interlaced.

- Command :

Command[0]	\x21
Command[1]	\x60

- Data :

  No data bytes.

- Return data :

  Data[0] = interlaced value.

	Data[0]
Not interlaced	\x00
Interlaced	\x01

- Example :

  Read the actual value of interlaced of a projector with address \x01. Suppose the signal is interlaced.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x60
Checksum	\x82
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x60
Data[0]	\x00
Checksum	\x82
Stop	\xff

- Description :

  Tell the projector the signal applied is not interlaced.

- Command :

Command[0]	\x26
Command[1]	\x60

- Data :

  No data bytes.

- Example :

  Define the signal as not interlaced on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x26
Command[1]	\x60
Checksum	\x87
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Tell the projector the signal applied is interlaced.

- Command :

Command[0]	\x27
Command[1]	\x60

- Data :

  No data bytes.

- Example :

  Define the signal as interlaced on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x27
Command[1]	\x60
Checksum	\x88
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Write an internaly generated pattern.

- Command :

Command[0]	\x41

- Data :

Convergence green

Data[0]	\x01

Convergence red/green

Data[0]	\x02

Convergence blue/green

Data[0]	\x03

Convergence red/blue/green

Data[0]	\x21
Data[1]	\x20

Hatch

Data[0]	\x04

Checkerboard

Data[0]	\x19

Color bars

Data[0]	\x1a

Multiburst

Data[0]	\x1b

Outline

Data[0]	\x1c

Alpha numeric characters

Data[0]	\x23

Page character

Data[0]	\x22
Data[1]	ascii code of an alphabetic character

Purity

Data[0]	\x20

To change the color of the purity pattern, use the command “palette entry, write” and change palette entry 1.

Leveling pattern (coarse)

Data[0]	\x24
Data[1]	\x01 (red) or \x02 (green) or \x03 (blue)
Data[2]	\x01 (position 1) or \x02 (position 2) or \x03 (position 3) or \x04 (position 4) or \x05 (position 5) or \x06 (position 6)

Leveling pattern (fine)

Data[0]	\x25
Data[1]	\x01 (red) or \x02 (green) or \x03 (blue)
Data[2]	\x01 (position 1) or \x02 (position 2) or \x03 (position 3) or \x04 (position 4) or \x05 (position 5) or \x06 (position 6)
Data[3]	\x00..\x255 (“contrast” level)

Note :
All data bytes mentioned above can optionally be followed by an extra byte to indicate that the pattern must be inverted or not. (exception : Purity)

	Data[next]OPTIONAL
not inverted	\x00
inverted	\x01

- Example :

  Write the purity internal pattern on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x41
Data[0]	\x20
Checksum	\x62
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the horizontal keystone.

- Command :

Command[0]	\x23
Command[1]	\x50

- Data :

  No data bytes.

- Example :

  Decrement the horizontal keystone of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x50
Checksum	\x74
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the horizontal keystone.

- Command :

Command[0]	\x22
Command[1]	\x50

- Data :

  No data bytes.

- Example :

  Increment the horizontal keystone of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x50
Checksum	\x73
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the horizontal keystone.

- Command :

Command[0]	\x21
Command[1]	\x50

- Data :

  No data bytes.

- Return data :

  Data[0..1] = value of the horizontal keystone.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the actual value of the horizontal keystone of a projector with address \x01. Suppose the horizontal keystone equals 0.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x50
Checksum	\x72
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x50
Data[0]	\x00
Data[1]	\x00
Checksum	\x72
Stop	\xff

- Description :

  Write a new value for the horizontal keystone.

- Command :

Command[0]	\x20
Command[1]	\x50

- Data :

  Data[0..1] = value of the horizontal keystone.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the horizontal keystone to 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x50
Data[0]	\x00
Data[1]	\x00
Checksum	\x71
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the lamp run time history list.

- Command :

Command[0]	\x74

- Data :

  No data bytes.

- Projector type :

  Only for projectors that don't have a memory chip attached to the lamp. See your Owner's Manual if the "Lamp History" item exists in the menu structure.

- Return data :

Lamp[0] serial number	c-language string
Lamp[0] run time	see formula below
Lamp[1] serial number	c-language string
Lamp[1] run time	see formula below
...	
Lamp[n-1] run time	see formula below
Lamp[n-1] serial number	c-language string

n = number of lamps stored in the history list

- c-language string (see syntax).
- formula lamp run time :

  Lamp run time (hours) = Data[1]*256 + Data[0]

- Description :

  Read the lamp run time in hours.

- Command :

Command[0]	\x64

- Data :

  No data bytes.

- Return data :

  The return data-transfer being the lamp run time in hours contains of four data bytes. The first byte is the most significant byte !
  Formula :
  Lamp run time (hours)
  = Data[0]*256^3 + Data[1]*256^2 + Data[2]*256 + Data[3]

- Example :

  Read the lamp run time of a projector with address \x01. Suppose the lamp run time is 100 hours.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x64
Checksum	\x65
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x64
Data[0]	\x00
Data[1]	\x00
Data[2]	\x00
Data[3]	\x64
Checksum	\xc9
Stop	\xff

lamp run time =
$\x00 * 256^3 + \x00 * 256^2 + \x00 * 256 + \x64$

- Description :

  Read the serial number of the lamp.

- Command :

Command[0]	\x63

- Data :

  No data bytes.

- Return data :

  The return data-transfer being the lamp serial number is a pascal-language string (see syntax).

- Example :

  Read the lamp serial number of a projector with address \x01. Suppose the lamp serial number is '0655230'.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x63
Checksum	\x64
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x63
Data[0]	\x07
Data[1]	\x30 (= '0')
Data[2]	\x36 (= '6')
Data[3]	\x35 (= '5')
Data[4]	\x35 (= '5')
Data[5]	\x32 (= '2')
Data[6]	\x33 (= '3')
Data[7]	\x30 (= '0')
Checksum	\xd0
Stop	\xff

- Description :

  Read the lamp status.

- Command :

Command[0]	\x6c

- Data :

  No data bytes.

- Return data :

  Data[0] = lamp status.
  Only bit0 (least significant bit) is significant.

bit#	bit = 0	bit = 1
bit0	nominal power	high power

- Projector type :

  BD8100, BG8100, BG8200, BG9200.

- Example :

  Read the lamp status of a projector with address \x01.
  Suppose the lamp is configured in high power.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x6c
Checksum	\x6d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x6c
Data[0]	\x01
Checksum	\x6e
Stop	\xff

- Description :

  Write a new lamp status.

- Command :

Command[0]	\xc6

- Data :

  Data[0] = lamp status.
  Only bit0 (least significant bit) is significant.

bit#	bit = 0	bit = 1
bit0	nominal power	high power

- Projector type :

  BD8100(LC), BG8100(LC), BG8200(LC), BG9200(LC).

- Example :

  Set the lamp status to high power of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xc6
Data[0]	\x01
Checksum	\xc8
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Reset the lamp run time (after installation of a new lamp).

- Command :

Command[0]	\x68

- Data :

  The data being the lamp serial number is a pascal-language string (see syntax) with length 7.

Data[0]	\x07
Data[1]	\x30..\x39
Data[2]	\x30..\x39
Data[3]	\x30..\x39
Data[4]	\x30..\x39
Data[5]	\x30..\x39
Data[6]	\x30..\x39
Data[7]	\x30..\x39

- Projector type :

  Only for projectors that don't have a memory chip attached to the lamp. See your Owner's Manual if the "Reset Lamp Runtime" item exists in the menu structure.

- Description :

  Read the language used for the on-screen-display.

- Command :

Command[0]	\x71

- Data :

  No data bytes.

- Projector type :

  See your Owner's Manual to verify what languages are supported by the projector software.

- Return data :

  Data[0] = language.

Language	Data[0]
English (International)	\x00
French	\x01
Spanish	\x02
Deutsch	\x03
Chinese	\x04

- Example :

  Read the language used for the on-screen-display of a projector with address \x01. Suppose the language is "English (International)".

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x71
Checksum	\x72
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x71
Data[0]	\x00
Checksum	\x72
Stop	\xff

- Description :

  Change the language used for the on-screen-display.

- Command :

Command[0]	\x70

- Data :

  Data[0] = language.

Language	Data[0]
English (International)	\x00
French	\x01
Spanish	\x02
Deutsch	\x03
Chinese	\x04

- Projector type :

  See your Owner's Manual to verify what languages are supported by the projector software.

- Example :

  Change the language used for the on-screen-display of a projector with address \x01 to "English (International)".

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x70
Data[0]	\x00
Checksum	\x71
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Open or close the lens bridge.

- Command :

Command[0]	\xf4
Command[1]	\x85

- Data :

Direction	Data[0]
Up	\x00
Down	\x01

- Projector type :

  All projectors with motorized lens bridge.

- Example :

  Open the bridge of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf4
Command[1]	\x85
Data[0]	\x00
Checksum	\x7a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Focus the lens.

- Command :

Command[0]	\xf4
Command[1]	\x83

- Data :

  Data[0] = direction.

Direction	Data[0]
Near	\x00
Far	\x01

- Projector type :

  All projectors with motorized lens adjustment.

- Example :

  Focus the lens of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf4
Command[1]	\x83
Data[0]	\x00
Checksum	\x78
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Shift the lens up, down, left or right.

- Command :

Command[0]	\xf4
Command[1]	\x81

- Data :

  Data[0] = direction.

Direction	Data[0]
Up	\x00
Down	\x01
Left	\x02
Right	\x03

- Projector type :

  All projectors with motorized lens adjustment.

- Example :

  Shift the lens up of of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf4
Command[1]	\x81
Data[0]	\x00
Checksum	\x76
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Change the tilt op the projector.

- Command :

Command[0]	\xf4
Command[1]	\x84

- Data :

  Data[0] = direction.

Direction	Data[0]
Counterclockwise	\x00
Clockwise	\x01

- Projector type :

  All projectors with motorized tilt adjustment.

- Example :

  Change the tilt in counterwise direction of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf4
Command[1]	\x84
Data[0]	\x01
Checksum	\x7a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Zoom the lens.

- Command :

Command[0]	\xf4
Command[1]	\x82

- Data :

  Data[0] = direction.

Direction	Data[0]
In	\x00
Out	\x01

- Projector type :

  All projectors with motorized lens adjustment.

- Example :

  Lens-zoom-in of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf4
Command[1]	\x82
Data[0]	\x00
Checksum	\x77
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the active number of lines.

- Command :

Command[0]	\x23
Command[1]	\x59

- Data :

  No data bytes.

- Example :

  Decrement the active number of lines on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x59
Checksum	\x7d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the active number of lines.

- Command :

Command[0]	\x22
Command[1]	\x59

- Data :

  No data bytes.

- Example :

  Increment the active number of lines on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x59
Checksum	\x7c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the active number of lines.

- Command :

Command[0]	\x21
Command[1]	\x59

- Data :

  No data bytes.

- Return data :

  Data[0..1] = active number of lines.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the active number of lines on a projector with address \x01. Suppose the active number of lines is 480 (\x01e0).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x59
Checksum	\x7b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x59
Data[0]	\x01
Data[1]	\xe0
Checksum	\x5c
Stop	\xff

- Description :

  Change the active number of lines.

- Command :

Command[0]	\x20
Command[1]	\x59

- Data :

  Data[0..1] = active number of lines.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the active number of lines to 480 (\x01e0) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x59
Data[0]	\x01
Data[1]	\xe0
Checksum	\x5b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the value of line start.

- Command :

Command[0]	\x23
Command[1]	\x5a

- Data :

  No data bytes.

- Example :

  Decrement line start on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x5a
Checksum	\x7e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the value of line start.

- Command :

Command[0]	\x22
Command[1]	\x5a

- Data :

  No data bytes.

- Example :

  Increment line start on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x5a
Checksum	\x7d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the value of line start.

- Command :

Command[0]	\x21
Command[1]	\x5a

- Data :

  No data bytes.

- Return data :

  Data[0..1] = line start.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the value of line start on a projector with address \x01. Suppose the value is 20 (\x0014).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5a
Checksum	\x7c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5a
Data[0]	\x00
Data[1]	\x14
Checksum	\x90
Stop	\xff

- Description :

  Change the value of line start.

- Command :

Command[0]	\x20
Command[1]	\x5a

- Data :

  Data[0..1] = line start.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the value of line start to 20 (\x0014) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x5a
Data[0]	\x00
Data[1]	\x14
Checksum	\x8f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the total number of lines.

- Command :

Command[0]	\x23
Command[1]	\x58

- Data :

  No data bytes.

- Example :

  Decrement the total number of lines on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x58
Checksum	\x7c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the total number of lines.

- Command :

Command[0]	\x22
Command[1]	\x58

- Data :

  No data bytes.

- Example :

  Increment the total number of lines on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x58
Checksum	\x7b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the total number of lines.

- Command :

Command[0]	\x21
Command[1]	\x58

- Data :

  No data bytes.

- Return data :

  Data[0..1] = total number of lines.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the total number of lines on a projector with address \x01. Suppose the total number of lines is 525 (\x020d).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x58
Checksum	\x7a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x58
Data[0]	\x02
Data[1]	\x0d
Checksum	\x89
Stop	\xff

- Description :

  Change the total number of lines.

- Command :

Command[0]	\x20
Command[1]	\x58

- Data :

  Data[0..1] = total number of lines.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the total number of lines to 525 (\x020d) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x58
Data[0]	\x02
Data[1]	\x0d
Checksum	\x88
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the status of the audio lock.

- Command :

Command[0]	\x21
Command[1]	\x3f

- Data :

  No data bytes.

- Return data :

  Data[0] = lock specification.

Lock	Data[0]
Off	\x00
Input 1 or A	\x01
Input 2 or B	\x02
Input 3 or C	\x03

- Projector type :

  BD2100(LC), BD3000(LC), BD3100(LC), BD3200(LC), BD3300(LC).

- Example :

  Read the audio lock status of a projector with address \x01. Suppose the audio signal is locked on audio input 1.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x3f
Checksum	\x61
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x3f
Data[0]	\x01
Checksum	\x62
Stop	\xff

- Description :

  Lock the audio signal to a specific audio input or set the lock off (audio input follows the video input).

- Command :

Command[0]	\x20
Command[1]	\x3f

- Data :

  Data[0] = lock specification.

Lock	Data[0]
Off	\x00
Input 1 or A	\x01
Input 2 or B	\x02
Input 3 or C	\x03

- Projector type :

  BD2100(LC), BD3000(LC), BD3100(LC), BD3200(LC), BD3300(LC).

- Example :

  Lock the audio signal on audio input 1 of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x3f
Data[0]	\x01
Checksum	\x61
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the background (on or off) of the logo.

- Command :

Command[0]	\xf1
Command[1]	\x82

- Data :

  No data bytes.

- Return data :

  Data[0] = logo background.

Background	Data[0]
Off (transparent)	\x00
On (black)	\x01

- Example :

  Read the background of the logo of a projector with address \x01. Suppose the background is off.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x82
Checksum	\x74
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x82
Data[0]	\x00
Checksum	\x74
Stop	\xff

- Description :

  Read the hot-key used to turn the logo on or off in operational mode.

- Command :

Command[0]	\xf1
Command[1]	\x83

- Data :

  No data bytes.

- Return data :

  Data[0] = logo hot-key.

Hot-key	Data[0]
Off	\x00
<TEXT>	\x0d

- Example :

  Read the hot-key of the logo of a projector with address \x01. Suppose the hot-key is off.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x83
Checksum	\x75
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x83
Data[0]	\x00
Checksum	\x75
Stop	\xff

- Description :

  Read the position of the logo.

- Command :

Command[0]	\xf1
Command[1]	\x84

- Data :

  No data bytes.

- Return data :

  Data[0] = horizontal position.
  Data[1] = vertical position.

- Example :

  Read the position of the logo of a projector with address \x01. Suppose the position equals (1, 1).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x84
Checksum	\x76
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x84
Data[0]	\x01
Data[1]	\x01
Checksum	\x78
Stop	\xff

- Description :

  Read the status (on or off) of the logo.

- Command :

Command[0]	\xf1
Command[1]	\x81

- Data :

  No data bytes.

- Return data :

  Data[0] = logo status.

Status	Data[0]
Off	\x00
On	\x01

- Example :

  Read the status of the logo of a projector with address \x01. Suppose the status is on.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x81
Checksum	\x73
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x81
Data[0]	\x01
Checksum	\x74
Stop	\xff

- Description :

  Change the background of the logo (set the background on or off).

- Command :

Command[0]	\xf1
Command[1]	\x02

- Data :

  Data[0] = logo background.

Background	Data[0]
Off (transparent)	\x00
On (black)	\x01

- Example :

  Set the logo background off of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x02
Data[0]	\x00
Checksum	\xf4
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Setup a hot-key to turn the logo on or off in operational mode.

- Command :

Command[0]	\xf1
Command[1]	\x03

- Data :

  Data[0] = logo hot-key.

Hot-key	Data[0]
Off	\x00
<TEXT>	\x0d

- Example :

  Set the logo hot-key to <TEXT> of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x03
Data[0]	\x0d
Checksum	\x02
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Change the position of the logo.

- Command :

Command[0]	\xf1
Command[1]	\x04

- Data :

  Data[0] = horizontal position.
  Data[1] = vertical position.

- Example :

  Set the logo position to (1, 1) of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x04
Data[0]	\x01
Data[1]	\x01
Checksum	\xf8
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Change the status of the logo (set the logo on or off).

- Command :

Command[0]	\xf1
Command[1]	\x01

- Data :

  Data[0] = logo status.

Status	Data[0]
Off	\x00
On	\x01

- Example :

  Set the logo on of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf1
Command[1]	\x01
Data[0]	\x01
Checksum	\xf4
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Exit one/all menus.

- Command :

Command[0]	\x42
Command[1]	\x01

- Data :

Data[0]	
\x01	Exit one menu
\xff	Exit all menus

- Example :

  Exit all menus on a projector with address \x01. (Go back to operational mode)

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x42
Command[1]	\x01
Data[0]	\x80
	\x7f
Checksum	\x43
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the version of the MOCA software.

- Command :

Command[0]	\xf3
Command[1]	\x82

- Data :

  No data bytes.

- Return data :

  The return data-transfer being the software version is a c-language string (see syntax).
  Note : there is no return data when the MOCA processor doesn't respond (not installed or busy).

- Projector type :

  All projectors equipped with MOCA.

- Example :

  Read the version of the MOCA software on a projector with address \x01. Suppose the version number is '1.02'.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf3
Command[1]	\x82
Checksum	\x76
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\xf3
Command[1]	\x82
Data[0]	\x31 (= '1')
Data[1]	\x2e (= '.')
Data[2]	\x30 (= '0')
Data[3]	\x32 (= '2')
Data[4]	\x00
Checksum	\x37
Stop	\xff

- Description :

  Set the "blue motors" of the MOCA to midposition.

- Command :

Command[0]	\xf3
Command[1]	\x06

- Data :

  No data bytes.

- Projector type :

  All projectors equipped with MOCA.

- Example :

  Set the "blue motors" of the MOCA on a projector with address \x01 to midposition.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf3
Command[1]	\x06
Checksum	\xfa
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set the "green motors" of the MOCA to midposition.

- Command :

Command[0]	\xf3
Command[1]	\x04

- Data :

  No data bytes.

- Projector type :

  All projectors equipped with MOCA.

- Example :

  Set the "green motors" of the MOCA on a projector with address \x01 to midposition.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf3
Command[1]	\x04
Checksum	\xf8
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set the "red motors" of the MOCA to midposition.

- Command :

Command[0]	\xf3
Command[1]	\x05

- Data :

  No data bytes.

- Projector type :

  All projectors equipped with MOCA.

- Example :

  Set the "red motors" of the MOCA on a projector with address \x01 to midposition.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf3
Command[1]	\x05
Checksum	\xf9
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set all motors of the MOCA to midposition.

- Command :

Command[0]	\xf3
Command[1]	\x07

- Data :

  No data bytes.

- Projector type :

  All projectors equipped with MOCA.

- Example :

  Set all motors of the MOCA on a projector with address \x01 to midposition.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf3
Command[1]	\x07
Checksum	\xfb
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Change the state of a "blue motor" of the MOCA.

- Command :

Command[0]	\xf3
Command[1]	\x03

- Data :

  Data[0] = Position on the screen (see osd internal pattern)

Position	Data[0]
1	\x01
2	\x02
3	\x03
4	\x04
5	\x05
6	\x06
7	\x07

  Data[1] = Direction (see osd internal pattern)

Direction	Data[1]
Up	\x01
Down	\x02
Left	\x03
Right	\x04

- Projector type :

  All projectors equipped with MOCA.

- Example :

  Change the state of a "blue motor" of the MOCA on a projector with address \x01 by executing "6 up".

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf3
Command[1]	\x03
Data[0]	\x06
Data[1]	\x01
Checksum	\x80
	\x7e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Change the state of a "green motor" of the MOCA.

- Command :

Command[0]	\xf3
Command[1]	\x01

- Data :

  Data[0] = Position on the screen (see osd internal pattern)

Position	Data[0]
1	\x01
2	\x02
3	\x03
4	\x04
5	\x05
6	\x06
7	\x07

  Data[1] = Direction (see osd internal pattern)

Direction	Data[1]
Up	\x01
Down	\x02
Left	\x03
Right	\x04

- Projector type :

  All projectors equipped with MOCA.

- Example :

  Change the state of a "green motor" of the MOCA on a projector with address \x01 by executing "6 up".

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf3
Command[1]	\x01
Data[0]	\x06
Data[1]	\x01
Checksum	\xfc
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Change the state of a "red motor" of the MOCA.

- Command :

Command[0]	\xf3
Command[1]	\x02

- Data :

  Data[0] = Position on the screen (see osd internal pattern)

Position	Data[0]
1	\x01
2	\x02
3	\x03
4	\x04
5	\x05
6	\x06
7	\x07

  Data[1] = Direction (see osd internal pattern)

Direction	Data[1]
Up	\x01
Down	\x02
Left	\x03
Right	\x04

- Projector type :

  All projectors equipped with MOCA.

- Example :

  Change the state of a "red motor" of the MOCA on a projector with address \x01 by executing "6 up".

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf3
Command[1]	\x02
Data[0]	\x06
Data[1]	\x01
Checksum	\xfd
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the size (in pixels) of the lcd panel.

- Command :

Command[0]	\xf0
Command[1]	\x01

- Data :

  No data bytes.

- Return data :

  Data[0..1] = number of pixels in horizontal direction.
  Data[2..3] = number of pixels in vertical direction.

Data[0]	msb of hpix
Data[1]	lsb of hpix
Data[2]	msb of vpix
Data[3]	lsb of vpix

- Example :

  Read the size of the lcd panel of a projector with address \x01. Suppose the size is 1024 x 768 pixels.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xf0
Command[1]	\x01
Checksum	\xf2
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\xf0
Command[1]	\x01
Data[0]	\x04
Data[1]	\x00
Data[2]	\x03
Data[3]	\x00
Checksum	\xf9
Stop	\xff

- Description :

  Select a source on an external switcher that is not in direct communication with the projector (800-port not used).

- Command :

Command[0]	\x33
Command[1]	\xff

- Data :

  Data[0] = source number (\x01..\x63).
  Data[1] = external slot type

Data[1]	Type
\x01	Video Input
\x02	S-Video Input
\x04	RGB Analog Input - Sync On Green
\x05	RGB Analog Input - Separate Sync
\x06	RGB3S/RG3SB Input - Sync On Green
\x07	RGB3S/RG3SB Input - Separate Sync
\x08	Component Input - Sync on Y
\x09	Component Input - Separate Sync
\x0a	Component Input - Tri-Level Sync On Y
\x0b	Component Input - Tri-Level Separate Sync

Data[2] = source mode

RGB Analog Input - Separate Sync

Data[2]	Mode
\x00	H/C : Composite Sync or H/C, V : Horizontal, Vertical Sync
\x01	H/C : Composite Video

Video Input
S-Video Input
RGB Analog Input - Sync On Green
RGB3S/RG3SB Input - Separate Sync
RGB3S/RG3SB Input - Sync On Green
Component Input - Separate Sync
Component Input - Sync On Y
Component Input - Tri-Level Separate Sync
Component Input - Tri-Level Sync On Y

Data[2]	Mode
\x00	-
\x01	

- Note :

  - The external switcher has to be connected to the projector the same way a BARCO 800 peripheral is normally connected. (See the Owner's Manual of your projector)
  - The source number (Data[0]) can be used to make sure the correct file is loaded.

- Example :

  Select source 1, type ' RGB Analog Input - Separate Sync', mode 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x33
Command[1]	\x80 \x7f
Data[0]	\x01
Data[1]	\x05
Data[2]	\x00
Checksum	\x39
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual phase value.

- Command :

Command[0]	\x21
Command[1]	\x06

- Data :

  No data bytes.

- Return data :

  Data[0] = phase value.

- Example :

  Read the actual phase value of a projector with address \x01. Suppose the phase equals \x03.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x06
Checksum	\x28
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x06
Data[0]	\x03
Checksum	\x2b
Stop	\xff

- Description :

  Write a new phase value.

- Command :

Command[0]	\x20
Command[1]	\x06

- Data :

  Data[0] = phase value
  or Data[0..1] = phase value (msb first)

- Projector type :

1 byte phase value	BD2100(LC), BD3000(LC), BD3100(LC) BD5000(LC), BD8000(LC)
2 byte phase value	others

- Example :

  Set the phase to \x03 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x06
Data[0]	\x03
Checksum	\x2a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the active number of pixels.

- Command :

Command[0]	\x23
Command[1]	\x5d

- Data :

  No data bytes.

- Example :

  Decrement the active number of pixels on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x5d
Checksum	\x81
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the active number of pixels.

- Command :

Command[0]	\x22
Command[1]	\x5d

- Data :

  No data bytes.

- Example :

  Increment the active number of pixels on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x5d
Checksum	\x80
	\x00
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the active number of pixels.

- Command :

Command[0]	\x21
Command[1]	\x5d

- Data :

  No data bytes.

- Return data :

  Data[0..1] = active number of pixels.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the active number of pixels on a projector with address \x01. Suppose the active number of pixels is 640 (\x0280).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5d
Checksum	\x7f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5d
Data[0]	\x02
Data[1]	\x80
	\x00
Checksum	\x01
Stop	\xff

- Description :

  Change the active number of pixels.

- Command :

Command[0]	\x20
Command[1]	\x5d

- Data :

  Data[0..1] = active number of pixels.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the active number of pixels to 640 (\x0280) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x5d
Data[0]	\x02
Data[1]	\x80
	\x00
Checksum	\x00
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the value of pixel start.

- Command :

Command[0]	\x23
Command[1]	\x5e

- Data :

  No data bytes.

- Example :

  Decrement pixel start on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x5e
Checksum	\x82
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the value of pixel start.

- Command :

Command[0]	\x22
Command[1]	\x5e

- Data :

  No data bytes.

- Example :

  Increment pixel start on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x5e
Checksum	\x81
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the value of pixel start.

- Command :

Command[0]	\x21
Command[1]	\x5e

- Data :

  No data bytes.

- Return data :

  Data[0..1] = pixel start.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the value of pixel start on a projector with address \x01. Suppose the value is 20 (\x0014).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5e
Checksum	\x80
	\x00
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5e
Data[0]	\x00
Data[1]	\x14
Checksum	\x94
Stop	\xff

- Description :

  Change the value of pixel start.

- Command :

Command[0]	\x20
Command[1]	\x5e

- Data :

  Data[0..1] = pixel start.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the value of pixel start to 20 (\x0014) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x5e
Data[0]	\x00
Data[1]	\x14
Checksum	\x93
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the total number of pixels.

- Command :

Command[0]	\x23
Command[1]	\x5c

- Data :

  No data bytes.

- Example :

  Decrement the total number of pixels on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x5c
Checksum	\x80
	\x00
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the total number of pixels.

- Command :

Command[0]	\x22
Command[1]	\x5c

- Data :

  No data bytes.

- Example :

  Increment the total number of pixels on a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x5c
Checksum	\x7f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the total number of pixels.

- Command :

Command[0]	\x21
Command[1]	\x5c

- Data :

  No data bytes.

- Return data :

  Data[0..1] = total number of pixels.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the total number of pixels on a projector with address \x01. Suppose the total number of pixels is 800 (\x0320).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5c
Checksum	\x7e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x5c
Data[0]	\x03
Data[1]	\x20
Checksum	\xa1
Stop	\xff

- Description :

  Change the total number of pixels.

- Command :

Command[0]	\x20
Command[1]	\x5c

- Data :

  Data[0..1] = total number of pixels.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the total number of pixels to 800 (\x0320) on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x5c
Data[0]	\x03
Data[1]	\x20
Checksum	\xa0
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Write blanking shapes (circles, rectangles, lines and triangles). (OPTIONAL)

- Command :

Command[0]	\xe1

- Data :

  Data for a solid circle with centre (x, y) and radius r.

	Data
Data[n]	'C' = '\x43'
Data[n+1]	x(msb)
Data[n+2]	x(lsb)
Data[n+3]	y(msb)
Data[n+4]	y(lsb)
Data[n+5]	r(msb)
Data[n+6]	r(lsb)

  Data for a hole circle with centre (x, y) and radius r.

	Data
Data[n]	'c' = '\x63'
Data[n+1]	x(msb)
Data[n+2]	x(lsb)
Data[n+3]	y(msb)
Data[n+4]	y(lsb)
Data[n+5]	r(msb)
Data[n+6]	r(lsb)

Data for a solid rectangle with coordinates (x1, y1) (x2, y2).

	Data
Data[n]	'R' = '\x52'
Data[n+1]	x1(msb)
Data[n+2]	x1(lsb)
Data[n+3]	y1(msb)
Data[n+4]	y1(lsb)
Data[n+5]	x2(msb)
Data[n+6]	x2(lsb)
Data[n+7]	y2(msb)
Data[n+8]	y2(lsb)

Data for a hole rectangle with coordinates (x1, y1) (x2, y2).

	Data
Data[n]	'r' = '\x72'
Data[n+1]	x1(msb)
Data[n+2]	x1(lsb)
Data[n+3]	y1(msb)
Data[n+4]	y1(lsb)
Data[n+5]	x2(msb)
Data[n+6]	x2(lsb)
Data[n+7]	y2(msb)
Data[n+8]	y2(lsb)

Data for a solid line with coordinates (x1, y) (x2, y).

	Data
Data[n]	'L' = '\x4c'
Data[n+1]	y(msb)
Data[n+2]	y(lsb)
Data[n+3]	x1(msb)
Data[n+4]	x1(lsb)
Data[n+5]	x2(msb)
Data[n+6]	x2(lsb)

Data for a hole line with coordinates (x1, y) (x2, y).

	Data
Data[n]	'l' = '\x6c'
Data[n+1]	y(msb)
Data[n+2]	y(lsb)
Data[n+3]	x1(msb)
Data[n+4]	x1(lsb)
Data[n+5]	x2(msb)
Data[n+6]	x2(lsb)

Data for a solid triangle with coordinates (x1, y1) (x2, y2) (x3, y3).

	Data
Data[n]	'T' = '\x54'
Data[n+1]	x1(msb)
Data[n+2]	x1(lsb)
Data[n+3]	y1(msb)
Data[n+4]	y1(lsb)
Data[n+5]	x2(msb)
Data[n+6]	x2(lsb)
Data[n+7]	y2(msb)
Data[n+8]	y2(lsb)
Data[n+9]	x3(msb)
Data[n+10]	x3(lsb)
Data[n+11]	y3(msb)
Data[n+12]	y3(lsb)

Data for a hole triangle with coordinates (x1, y1) (x2, y2) (x3, y3).

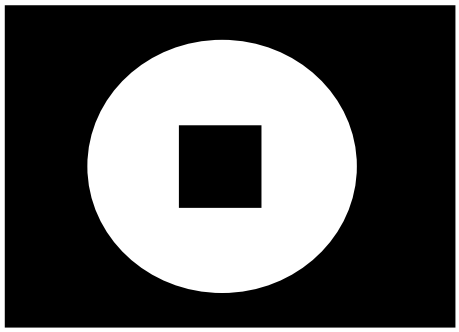
	Data
Data[n]	't' = '\x74'
Data[n+1]	x1(msb)
Data[n+2]	x1(lsb)
Data[n+3]	y1(msb)
Data[n+4]	y1(lsb)
Data[n+5]	x2(msb)
Data[n+6]	x2(lsb)
Data[n+7]	y2(msb)
Data[n+8]	y2(lsb)
Data[n+5]	x2(msb)
Data[n+6]	x2(lsb)
Data[n+7]	y2(msb)
Data[n+8]	y2(lsb)

- Notes :

  - The calculations are made starting from an imaginary solid shape as large as the lcd panel.
  - To combine several shapes, just put the data of the requested shapes after each other. The order in which the shapes are drawn is the same as the order in which they are sent to the projector.
  - The values of the coordinates have to be checked by the computer !!! Extreme large coordinates can lead to microprocessor reset.
  - "Solid shape" means blanked inside the shape;
  - "Hole shape" means no blanking inside the shape.
  - The first pixel on the screen (top/left) has coordinate (0,0).

- Example :

  Draw following blanking pattern on a projector with address \x01.



- hole circle (x=350, y=250, r=200)
- solid rectangle (x1=300, y1=200, x2=400, y2=300)

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\xe1
Data[0]	\x63
Data[1]	\x01
Data[2]	\x5e
Data[3]	\x00
Data[4]	\xfa
Data[5]	\x00
Data[6]	\xc8
Data[7]	\x52
Data[8]	\x01
Data[9]	\x2c
Data[10]	\x00
Data[11]	\xc8
Data[12]	\x01
Data[13]	\x90
Data[14]	\x01
Data[15]	\x2c
Checksum	\x6b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the projector run time in seconds.

- Command :

Command[0]	\x62

- Data :

  No data bytes.

- Return data :

  The return data-transfer being the projector run time in seconds contains of four data bytes. The first byte is the most significant byte !
  Formula :
  Projector run time (seconds)
  = Data[0]*256^3 + Data[1]*256^2 + Data[2]*256 + Data[3]

- Example :

  Read the projector run time of a projector with address \x01. Suppose the projector run time is 3000 hours (10800000 seconds).

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x62
Checksum	\x63
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x62
Data[0]	\x00
Data[1]	\xa4
Data[2]	\xcb
Data[3]	\x80
	\x00
Checksum	\x52
Stop	\xff

projector run time =
\x00 * 256^3 + \xa4 * 256^2 + \xcb * 256 + \x80

- Description :

  Read the serial number of the projector.

- Command :

Command[0]	\x61

- Data :

  No data bytes.

- Return data :

  The return data-transfer being the projector serial number is a pascal-language string (see syntax).

- Example :

  Read the serial number of a projector with address \x01. Suppose the projector serial number is '0000001'.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x61
Checksum	\x62
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x61
Data[0]	\x07
Data[1]	\x30 (= '0')
Data[2]	\x30 (= '0')
Data[3]	\x30 (= '0')
Data[4]	\x30 (= '0')
Data[5]	\x30 (= '0')
Data[6]	\x30 (= '0')
Data[7]	\x31 (= '1')
Checksum	\xba
Stop	\xff

- Description :

  Determine the type of projector you are communicating with.

- Command :

Command[0]	\x6b

- Data :

  No data bytes.

- Return data :

  The return data-transfer being the projector type is a pascal-language string (see syntax).

- Example :

  Read the projector type of a projector with address \x01. Suppose the projector is a 'BARCODATA 8100'.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x6b
Checksum	\x6c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x6b
Data[0]	\x0e
Data[1]	\x42 (= 'B')
Data[2]	\x41 (= 'A')
Data[3]	\x52 (= 'R')
Data[4]	\x43 (= 'C')
Data[5]	\x4f (= 'O')
Data[6]	\x44 (= 'D')
Data[7]	\x41 (= 'A')
Data[8]	\x54 (= 'T')
Data[9]	\x41 (= 'A')
Data[10]	\x20 (= ' ')
Data[11]	\x38 (= '8')
Data[12]	\x31 (= '1')
Data[13]	\x30 (= '0')
Data[14]	\x30 (= '0')
Checksum	\xe4
Stop	\xff

- Description :

  Write the projector address.

- Command :

Command[0]	\x6d

- Data :

  Data[0] = projector address.

Data[0]	\x00..\xff

- Note :

  The acknowledge will be sent with the original projector address.

- Example :

  Set the address of a projector with address \x01 to \x20.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x6d
Data[0]	\x20
Checksum	\x8e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual sharpness value.

- Command :

Command[0]	\x21
Command[1]	\x05

- Data :

  No data bytes.

- Return data :

  Data[0] = sharpness value.

Exception list

Projector Type	On screen	Data[0]
BD5000(LC), BD8000(LC)	"-4 db"	\x00
	"0 db"	\x01
	"3,5 db"	\x02
	"6 db"	\x03
BD3000(LC), BD3100(LC), BD5100(LC), BD8100(LC)	"0"	\x00
	"0.25"	\x01
	"0.5"	\x02
	"1"	\x03

- Example :

  Read the actual sharpness value of a projector with address \x01. Suppose the sharpness equals \x03.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x05
Checksum	\x27
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x05
Data[0]	\x03
Checksum	\x2a
Stop	\xff

- Description :

  Write a new sharpness value.

- Command :

Command[0]	\x20
Command[1]	\x05

- Data :

  Data[0] = sharpness value.

Exception list

Projector Type	On screen	Data[0]
BD5000(LC), BD8000(LC)	"-4 db"	\x00
	"0 db"	\x01
	"3,5 db"	\x02
	"6 db"	\x03
BD3000(LC), BD3100(LC), BD5100(LC), BD8100(LC)	"0"	\x00
	"0.25"	\x01
	"0.5"	\x02
	"1"	\x03

- Example :

  Set the sharpness to \x03 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x05
Data[0]	\x03
Checksum	\x29
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the horizontal shift.

- Command :

Command[0]	\x23
Command[1]	\x47

- Data :

  No data bytes.

- Example :

  Decrement the horizontal shift of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x47
Checksum	\x6b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the horizontal shift.

- Command :

Command[0]	\x22
Command[1]	\x47

- Data :

  No data bytes.

- Example :

  Increment the horizontal shift of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x47
Checksum	\x6a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the horizontal shift.

- Command :

Command[0]	\x21
Command[1]	\x47

- Data :

  No data bytes.

- Return data :

  Data[0..1] = value of the horizontal shift.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the actual value of the horizontal shift of a projector with address \x01. Suppose the horizontal shift equals 0.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x47
Checksum	\x69
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x47
Data[0]	\x00
Data[1]	\x00
Checksum	\x69
Stop	\xff

- Description :

  Write a new value for the horizontal shift.

- Command :

Command[0]	\x20
Command[1]	\x47

- Data :

  Data[0..1] = value of the horizontal shift.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the horizontal shift to 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x47
Data[0]	\x00
Data[1]	\x00
Checksum	\x68
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the vertical shift.

- Command :

Command[0]	\x23
Command[1]	\x48

- Data :

  No data bytes.

- Example :

  Decrement the vertical shift of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x48
Checksum	\x6c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the vertical shift.

- Command :

Command[0]	\x22
Command[1]	\x48

- Data :

  No data bytes.

- Example :

  Increment the vertical shift of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x48
Checksum	\x6b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the vertical shift.

- Command :

Command[0]	\x21
Command[1]	\x48

- Data :

  No data bytes.

- Return data :

  Data[0..1] = value of the vertical shift.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the actual value of the vertical shift of a projector with address \x01. Suppose the vertical shift equals 0.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x48
Checksum	\x6a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x48
Data[0]	\x00
Data[1]	\x00
Checksum	\x6a
Stop	\xff

- Description :

  Write a new value for the vertical shift.

- Command :

Command[0]	\x20
Command[1]	\x48

- Data :

  Data[0..1] = value of the vertical shift.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the vertical shift to 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x48
Data[0]	\x00
Data[1]	\x00
Checksum	\x69
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the horizontal size.

- Command :

Command[0]	\x23
Command[1]	\x49

- Data :

  No data bytes.

- Example :

  Decrement the horizontal size of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x49
Checksum	\x6d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the horizontal size.

- Command :

Command[0]	\x22
Command[1]	\x49

- Data :

  No data bytes.

- Example :

  Increment the horizontal size of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x49
Checksum	\x6c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the horizontal size.

- Command :

Command[0]	\x21
Command[1]	\x49

- Data :

  No data bytes.

- Return data :

  Data[0..1] = value of the horizontal size.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the actual value of the horizontal size of a projector with address \x01. Suppose the horizontal size equals 0.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x49
Checksum	\x6b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x49
Data[0]	\x00
Data[1]	\x00
Checksum	\x6b
Stop	\xff

- Description :

  Write a new value for the horizontal size.

- Command :

Command[0]	\x20
Command[1]	\x49

- Data :

  Data[0..1] = value of the horizontal size.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the horizontal size to 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x49
Data[0]	\x00
Data[1]	\x00
Checksum	\x6a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Decrement the vertical size.

- Command :

Command[0]	\x23
Command[1]	\x4a

- Data :

  No data bytes.

- Example :

  Decrement the vertical size of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x4a
Checksum	\x6e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Increment the vertical size.

- Command :

Command[0]	\x22
Command[1]	\x4a

- Data :

  No data bytes.

- Example :

  Increment the vertical size of a projector with address \x01 by one.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x4a
Checksum	\x6d
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the vertical size.

- Command :

Command[0]	\x21
Command[1]	\x4a

- Data :

  No data bytes.

- Return data :

  Data[0..1] = value of the vertical size.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Read the actual value of the vertical size of a projector with address \x01. Suppose the vertical size equals 0.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x4a
Checksum	\x6c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x4a
Data[0]	\x00
Data[1]	\x00
Checksum	\x6c
Stop	\xff

- Description :

  Write a new value for the vertical size.

- Command :

Command[0]	\x20
Command[1]	\x4a

- Data :

  Data[0..1] = value of the vertical size.

Data[0]	msb of value
Data[1]	lsb of value

- Example :

  Set the vertical size to 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x4a
Data[0]	\x00
Data[1]	\x00
Checksum	\x6b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Close the mechanical shutter (OPTIONAL).

- Command :

Command[0]	\x23
Command[1]	\x42

- Data :

  Data[0] = speed.

	Data[0]
Fast	\x00
Slow	\x01

- Projector type :

  Some projectors don't make the difference between "Fast" and "Slow" speed. However, Data[0] must always be sent.

- Example :

  Close the shutter (full speed) of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x23
Command[1]	\x42
Data[0]	\x00
Checksum	\x66
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Open the mechanical shutter (OPTIONAL).

- Command :

Command[0]	\x22
Command[1]	\x42

- Data :

  Data[0] = speed.

	Data[0]
Fast	\x00
Slow	\x01

- Projector type :

  Some projectors don't make the difference between "Fast" and "Slow" speed. However, Data[0] must always be sent.

- Example :

  Open the shutter (full speed) of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x22
Command[1]	\x42
Data[0]	\x00
Checksum	\x65
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual shutter position (OPTIONAL).

- Command :

Command[0]	\x21
Command[1]	\x42

- Data :

  No data bytes.

- Return data :

  Data[0] = shutter position.

	Data[0]
Closed	\x00
Open	\x01
Undetermined	\x02

- Projector type :

  Some projectors cannot determine wheather the shutter is "Open" or "Closed". These projectors always return "Undetermined".

- Example :

  Read the actual shutter position of a projector with address \x01. Suppose the shutter is open.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x42
Checksum	\x64
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x42
Data[0]	\x01
Checksum	\x65
Stop	\xff

- Description :

  Read the language used in the on-screen-display.

- Command :

Command[0]	\x69

- Data :

  No data bytes.

- Return data :

  The return data-transfer being the software language is a pascal-language string (see syntax).

- Example :

  Read the on-screen-display language of a projector with address \x01. Suppose the lanuage is 'ENGLISH'.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x69
Checksum	\x6a
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x69
Data[0]	\x07
Data[1]	\x45 (= 'E')
Data[2]	\x4e (= 'N')
Data[3]	\x47 (= 'G')
Data[4]	\x4c (= 'L')
Data[5]	\x49 (= 'I')
Data[6]	\x53 (= 'S')
Data[7]	\x48 (= 'H')
Checksum	\x7b
Stop	\xff

- Description :

  Read the type of software installed in the projector.

- Command :

Command[0]	\x6a

- Data :

  No data bytes.

- Return data :

  The return data-transfer being the software type is a pascal-language string (see syntax).

- Example :

  Read the software type of a projector with address \x01. Suppose the lanuage is 'STANDARD'.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x6a
Checksum	\x6b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x6a
Data[0]	\x08
Data[1]	\x53 (= 'S')
Data[2]	\x54 (= 'T')
Data[3]	\x41 (= 'A')
Data[4]	\x4e (= 'N')
Data[5]	\x44 (= 'D')
Data[6]	\x41 (= 'A')
Data[7]	\x52 (= 'R')
Data[8]	\x44 (= 'D')
Checksum	\xc4
Stop	\xff

- Description :

  Read the version of the software.

- Command :

Command[0]	\x60

- Data :

  No data bytes.

- Return data :

  The return data-transfer being the software version is a pascal-language string (see syntax).

- Example :

  Read the software version of a projector with address \x01. Suppose the version number is '1.02'.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x60
Checksum	\x61
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x60
Data[0]	\x04
Data[1]	\x31 (= '1')
Data[2]	\x2e (= '.')
Data[3]	\x30 (= '0')
Data[4]	\x32 (= '2')
Checksum	\x26
Stop	\xff

- Description :

  Read active source or slot number and its mode.

- Command :

Command[0]	\x34

- Data :

  No data bytes.

- Return data :

  Data[0] = source or slot number (\x01..).

Data[1] = source or slot mode

Video/S-Video Input

Data[1]	Mode
\x00	Video
\x01	S-Video

RGB Analog Input - Separate Sync

Data[1]	Mode
\x00	H/C : Composite Sync or H/C, V : Horizontal, Vertical Sync
\x01	H/C : Composite Video

Fixed 5-Cable Input

Data[1]	Mode
\x00	RGB Analog – Separate Sync H/C : Composite Sync or H/C, V : Horizontal, Vertical Sync
\x01	RGB Analog – Separate Sync H/C : Composite Video or H/C : 3 Level Composite Sync
\x02	RGB Analog – Sync on Green G : Green + Sync or G : Green + 3 Level Sync
\x03	Component Video – Separate Sync Cs : Sync or Cs : 3 Level Sync
\x04	Component Video – Sync on Y Y : Y + Sync or Y : Y + 3 Level Sync
\x05	Video
\x06	S-Video

RGB Analog Input - Sync On Green
RGB3S/RG3SB Input - Separate Sync
RGB3S/RG3SB Input - Sync On Green
Component Input - Separate Sync
Component Input - Sync On Y
Component Input - Tri-Level Separate Sync
Component Input - Tri-Level Sync On Y

Data[1]	Mode
\x00	-
\x01	

- Example :

  Read the active source/slot number+mode of a projector with address \x01. Suppose the source number equals \x03 and its mode equals \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x34
Checksum	\x35
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x34
Data[0]	\x03
Data[1]	\x01
Checksum	\x39
Stop	\xff

- Description :

  Select a source or slot and put it in a pre-defined mode (mode selection is optional).

- Command :

Command[0]	\x33

- Data :

  Data[0] = source or slot number (\x01..).

Data[1] = source or slot mode OPTIONAL

Video/S-Video Input

Data[1]	Mode
\x00	Video
\x01	S-Video

RGB Analog Input - Separate Sync

Data[1]	Mode
\x00	H/C : Composite Sync or H/C, V : Horizontal, Vertical Sync
\x01	H/C : Composite Video

Fixed 5-Cable Input

Data[1]	Mode
\x00	RGB Analog – Separate Sync H/C : Composite Sync or H/C, V : Horizontal, Vertical Sync
\x01	RGB Analog – Separate Sync H/C : Composite Video or H/C : 3 Level Composite Sync
\x02	RGB Analog – Sync on Green G : Green + Sync or G : Green + 3 Level Sync
\x03	Component Video – Separate Sync Cs : Sync or Cs : 3 Level Sync
\x04	Component Video – Sync on Y Y : Y + Sync or Y : Y + 3 Level Sync
\x05	Video
\x06	S-Video

RGB Analog Input - Sync On Green
RGB3S/RG3SB Input - Separate Sync
RGB3S/RG3SB Input - Sync On Green
Component Input - Separate Sync
Component Input - Sync On Y
Component Input - Tri-Level Separate Sync
Component Input - Tri-Level Sync On Y

Data[1]	Mode
\x00	-
\x01	

Remark : If only one data byte has been sent (Data[0]), the slot will be selected in its previous mode.

- Example :

  Select source 1, mode 1 of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x33
Data[0]	\x01
Data[1]	\x01
Checksum	\x36
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read slow/fast sync (only active when the decoder is used).

- Command :

Command[0]	\x21
Command[1]	\x27

- Data :

  No data bytes.

- Return data :

  Data[0] = sync.

Sync	Data[0]
Slow	\x00
Fast	\x04

- Projector type :

  BD2100(LC), BD3000(LC), BD3100(LC), BD5100(LC), BD8100(LC), BG8100(LC)..

- Example :

  Read the sync status of a projector with address \x01.
  Suppose the sync status equals fast.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x27
Checksum	\x49
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x27
Data[0]	\x04
Checksum	\x4d
Stop	\xff

- Description :

  Set the sync to fast (only active when the decoder is used).

- Command :

Command[0]	\x27
Command[1]	\x27

- Data :

  No data bytes.

- Projector type :

  BD2100(LC), BD3000(LC), BD3100(LC), BD5100(LC), BD8100(LC), BG8100(LC)..

- Example :

  Set the sync to fast of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x27
Command[1]	\x27
Checksum	\x4f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set the sync to slow (only active when the decoder is used).

- Command :

Command[0]	\x26
Command[1]	\x27

- Data :

  No data bytes.

- Projector type :

  BD2100(LC), BD3000(LC), BD3100(LC), BD5100(LC), BD8100(LC), BG8100(LC)..

- Example :

  Set the sync to slow of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x26
Command[1]	\x27
Checksum	\x4e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set text off (identical to TEXT button on infrared remote control).

- Command :

Command[0]	\x0e

- Data :

  No data bytes.

- Example :

  Set text off of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x0e
Checksum	\x0f
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set text on (identical to TEXT button on infrared remote control).

- Command :

Command[0]	\x0d

- Data :

  No data bytes.

- Example :

  Set text on of a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x0d
Checksum	\x0e
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual tint value.
  (only active when the internal decoder is used and the signal is NTSC).

- Command :

Command[0]	\x21
Command[1]	\x04

- Data :

  No data bytes.

- Return data :

  Data[0] = tint value.

- Note :

  This command is only active when the internal decoder is used and the signal is NTSC.

- Example :

  Read the actual tint value of a projector with address \x01. Suppose the tint equals 0.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x04
Checksum	\x26
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x04
Data[0]	\x00
Checksum	\x26
Stop	\xff

- Description :

  Write a new tint value.

- Command :

Command[0]	\x20
Command[1]	\x04

- Data :

  Data[0] = tint value.

- Note :

  This command is only active when the internal decoder is used and the signal is NTSC.

- Example :

  Set the tint to 0 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x04
Data[0]	\x00
Checksum	\x25
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual treble value.

- Command :

Command[0]	\x21
Command[1]	\x09

- Data :

  No data bytes.

- Return data :

  Data[0] = treble value.

- Projector type :

  All projectors with audio control.

- Example :

  Read the actual treble value of a projector with address \x01. Suppose the volume equals \xff.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x09
Checksum	\x2b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x09
Data[0]	\x80
	\x7f
Checksum	\x2a
Stop	\xff

- Description :

  Write a new treble value.

- Command :

Command[0]	\x20
Command[1]	\x09

- Data :

  Data[0] = treble value.

- Projector type :

  All projectors with audio control.

- Example :

  Set the treble to \xff on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x09
Data[0]	\x80
	\x7f
Checksum	\x29
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the vertical refresh.

- Command :

Command[0]	\x21
Command[1]	\x61

- Data :

  No data bytes.

- Return data :

  Data[0] = value of the vertical refresh.

	Data[0]
Sync	\x00
Async	\x01

- Example :

  Read the actual value of the vertical refresh of a projector with address \x01. Suppose the vertical refresh is synchronous.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x61
Checksum	\x83
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x61
Data[0]	\x00
Checksum	\x83
Stop	\xff

- Description :

  Set the vertical refresh to synchronous.

- Command :

Command[0]	\x26
Command[1]	\x61

- Data :

  No data bytes.

- Example :

  Set the vertical refresh to synchronous on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x26
Command[1]	\x61
Checksum	\x88
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set the vertical refresh to asynchronous.

- Command :

Command[0]	\x27
Command[1]	\x61

- Data :

  No data bytes.

- Example :

  Set the vertical refresh to asynchronous on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x27
Command[1]	\x61
Checksum	\x89
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual value of the vertical sync polarity.

- Command :

Command[0]	\x21
Command[1]	\x64

- Data :

  No data bytes.

- Return data :

  Data[0] = value of the vertical sync polarity.

	Data[0]
Leading	\x00
Trailing	\x01

- Example :

  Read the actual value of the vertical sync polarity of a projector with address \x01. Suppose the vertical sync polarity is leading.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x64
Checksum	\x86
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x64
Data[0]	\x00
Checksum	\x86
Stop	\xff

- Description :

  Set the vertical sync polarity to leading.

- Command :

Command[0]	\x26
Command[1]	\x64

- Data :

  No data bytes.

- Example :

  Set the vertical sync polarity to leading on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x26
Command[1]	\x64
Checksum	\x8b
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Set the vertical sync polarity to trailing.

- Command :

Command[0]	\x27
Command[1]	\x64

- Data :

  No data bytes.

- Example :

  Set the vertical sync polarity to trailing on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x27
Command[1]	\x64
Checksum	\x8c
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

- Description :

  Read the actual volume value.

- Command :

Command[0]	\x21
Command[1]	\x07

- Data :

  No data bytes.

- Return data :

  Data[0] = volume value.

- Example :

  Read the actual volume value of a projector with address \x01. Suppose the volume equals \x10.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x07
Checksum	\x29
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Receive (answer)	
Start	\xfe
Projector address	\x01
Command[0]	\x21
Command[1]	\x07
Data[0]	\x10
Checksum	\x39
Stop	\xff

- Description :

  Write a new volume value.

- Command :

Command[0]	\x20
Command[1]	\x07

- Data :

  Data[0] = volume value.

- Example :

  Set the volume to \x10 on a projector with address \x01.

Transmit	
Start	\xfe
Projector address	\x01
Command[0]	\x20
Command[1]	\x07
Data[0]	\x10
Checksum	\x38
Stop	\xff

Receive (acknowledge)	
Start	\xfe
Projector address	\x01
Command[0]	\x00
Command[1]	\x06
Checksum	\x07
Stop	\xff

Appendix : Command summary

800-peripheral, read output module : \xf2\x81[config]
800-peripheral, write output module : \xf2\x01[config]
balance, decrement : \x23\x0a
balance, increment : \x22\x0a
balance, read : \x21\x0a
balance, write : \x20\x0a[value]
bass, decrement : \x23\x08
bass, increment : \x22\x08
bass, read : \x21\x08
bass, write : \x20\x08[value]
baudrate pc, write : \x75[baudrate]
blanking bottom, decrement : \x23\x4d
blanking bottom, increment : \x22\x4d
blanking bottom, read : \x21\x4d
blanking bottom, write : \x20\x4d[value]
blanking left, decrement : \x23\x4e
blanking left, increment : \x22\x4e
blanking left, read : \x21\x4e
blanking left, write : \x20\x4e[value]
blanking right, decrement : \x23\x4f
blanking right, increment : \x22\x4f
blanking right, read : \x21\x4f
blanking right, write : \x20\x4f[value]
blanking top, decrement : \x23\x4c
blanking top, increment : \x22\x4c
blanking top, read : \x21\x4c
blanking top, write : \x20\x4c[value]
brightness, decrement : \x04
brightness, increment : \x03
brightness, read : \x21\x02
brightness, write : \x20\x02[value]
clamp delay, decrement : \x23\x67
clamp delay, increment : \x22\x67

clamp delay, read : \x21\x67
clamp delay, write : \x20\x67[value]
clamp edge, read : \x21\x66
clamp edge, write leading : \x26\x66
clamp edge, write trailing : \x27\x66
clamp width, decrement : \x23\x68
clamp width, increment : \x22\x68
clamp width, read : \x21\x68
clamp width, write : \x20\x68[value]
color balance blue/green, decrement : \x23\x44
color balance blue/green, increment : \x22\x44
color balance blue/green, read : \x21\x44
color balance blue/green, write : \x20\x44[value]
color balance red/green, decrement : \x23\x43
color balance red/green, increment : \x22\x43
color balance red/green, read : \x21\x43
color balance red/green, write : \x20\x43[value]
color temperature, read : \x21\x45
color temperature, write : \x20\x45[value]
color, decrement : \x06
color, increment : \x05
color, read : \x21\x03
color, write : \x20\x03[value]
contrast, decrement : \x02
contrast, increment : \x01
contrast, read : \x21\x01
contrast, write : \x20\x01[value]
dimming, decrement : \x23\x0d
dimming, increment : \x22\x0d
dimming, read : \x21\x0d
fade audio extern, decrement : \x23\x41
fade audio extern, increment : \x22\x41

fade audio extern, read : \x21\x41
fade audio extern, write : \x20\x41[value]
fade audio intern, decrement : \x23\x40
fade audio intern, increment : \x22\x40
fade audio intern, read : \x21\x40
fade audio intern, write : \x20\x40[value]
field polarity, read : \x21\x62
field polarity, write : \x20\x62[value]
field select, read : \x21\x63
field select, write : \x20\x63[value]
file, copy : \xc2[filename1][filename2]
file, delete : \xc1[filename]
file, list : \xc0[filename]
file, list active : \xc5
file, move : \xc4[filename1][filename2]
file, read : \xbf[filename]
file, rename : \xc3[filename1][filename2]
file, write : \xbe[filename][data]
frame delay, read : \x21\x65
frame delay, write off : \x26\x65
frame delay, write on : \x27\x65
freeze, write off : \x26\x23
freeze, write on : \x27\x23
gamma, decrement : \x23\x70
gamma, increment : \x22\x70
gamma, read : \x21\x70
gamma, write : \x20\x70[value]
horizontal period, read : \x21\x5b
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